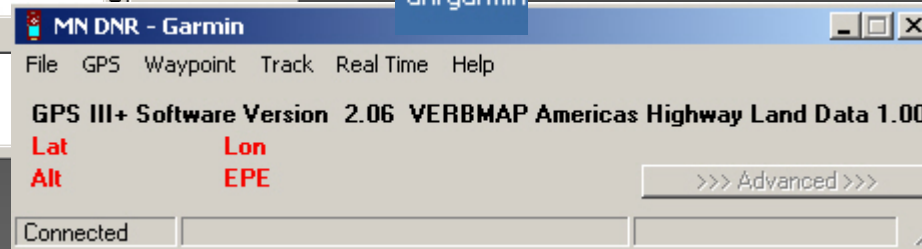
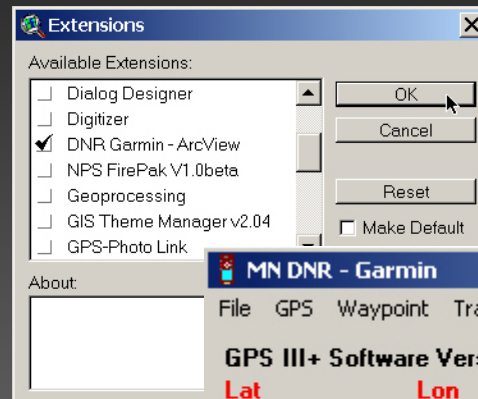
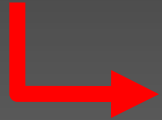


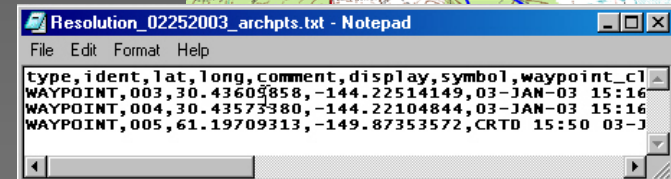
Post-Field



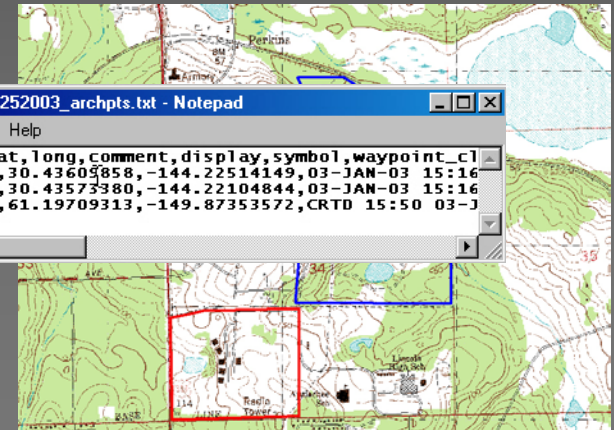
Collect
Data



DNR Garmin



.txt



ArcView

Post-Field Overview

- DNR Garmin Program
- DNR Garmin Extension in ArcView

Managing GPS Data

Editing GPS & GIS Data

Attributing Data

Map Making

Review of ArcView Terminology

View =

Window to display (and sometimes edit)
geographic features (as themes)

Shapefile =

ArcView data layer

Theme =

Single data layer (e.g., Shapefile) added to View

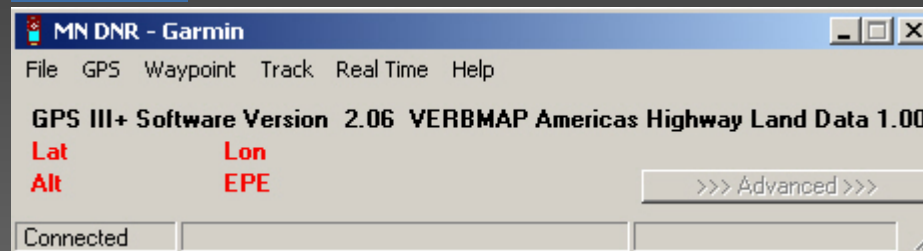
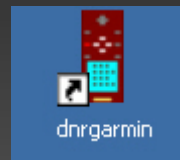
Layout =

Window to display View and graphics for map
creation

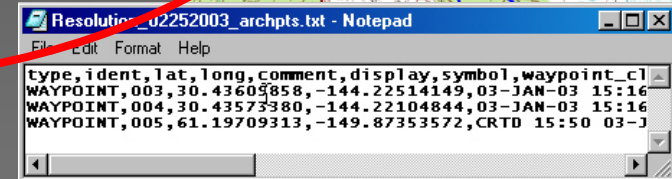
DNR Garmin: Installation and Setup



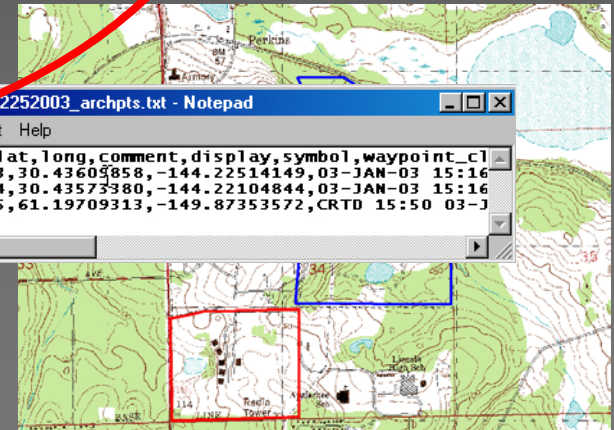
Collect
Data



DNR Garmin



.txt



ArcView

Objectives

- Overview of DNR Garmin
- Install DNR Garmin
 - Requirements
 - Installation Steps

DNR Garmin

- Overview
 - Developed by Minnesota Dept. of Natural Resources
 - Integrates ESRI's ArcView 3.x software with all types of Garmin brand GPS receivers.
 - Comprised of a Visual Basic (VB) program and an ArcView extension
 - VB: DNRGarmin program (*.exe) communicates with GPS via a serial port allowing for transfer of waypoints and tracks
 - ArcView Extension: Allows for working in ArcView for shapefile / graphic creation (shapefiles in projection and datum of choice)

DNR Garmin

- Overview cont.
 - Can work independently of ArcView, data saved as text files (*.txt) or shapefiles in Lat/Long Decimal Degrees, WGS84 datum
 - Available from Internet or your Training CD
 - Training CD: /Software/DNRGarmin
 - Internet*



TIP <http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>

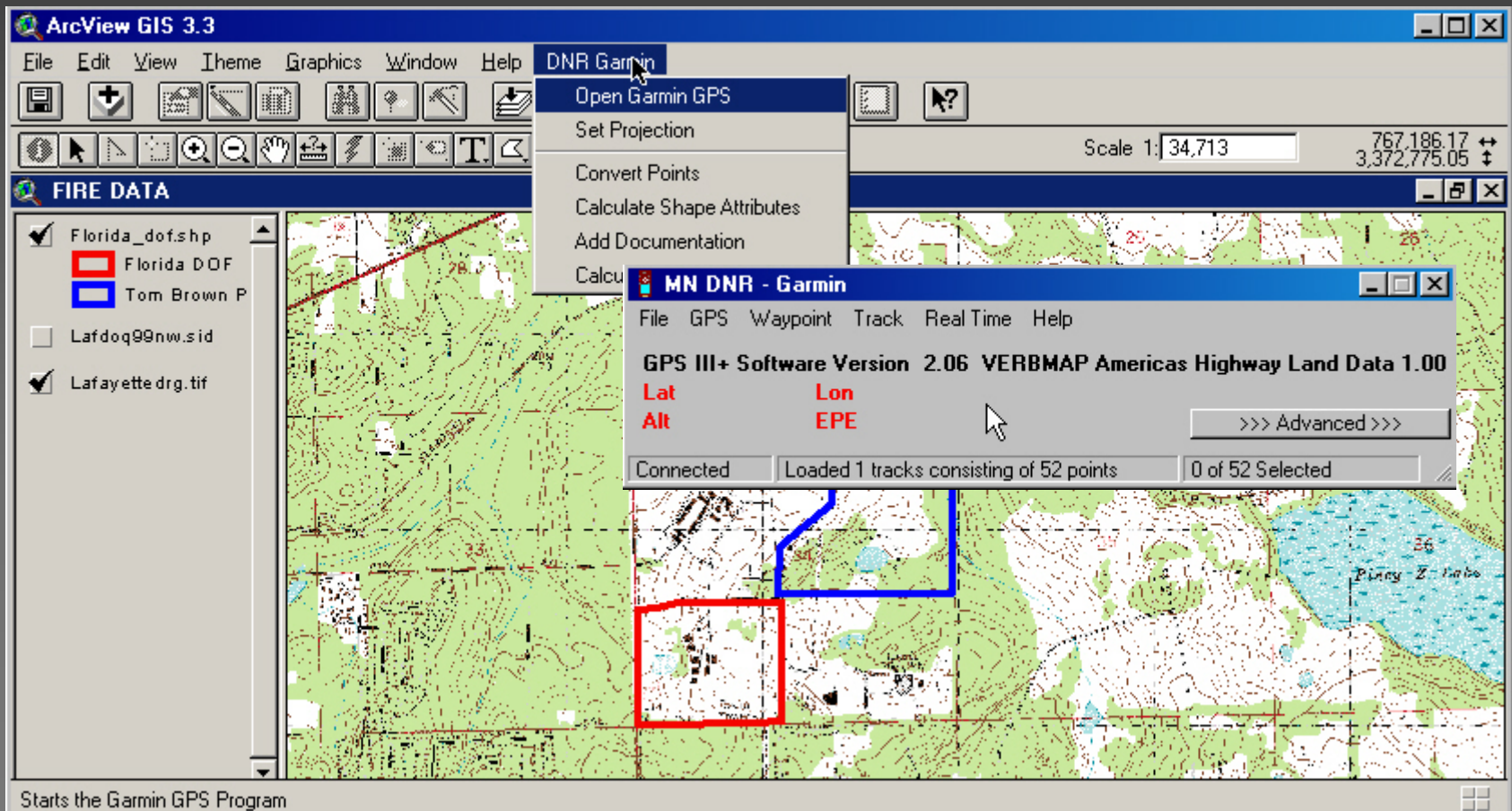
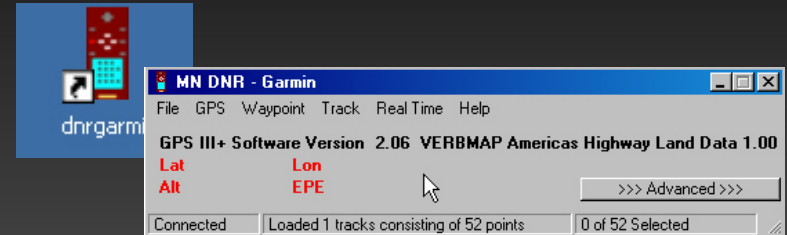
DNR Garmin Functionality Highlights

- Download / Upload Waypoints & Tracks
- Convert Waypoints to Points, Lines and Polygons
- Convert Tracks to Points, Lines or Polygons
- Calculates Area, Perimeter, Length
- Allows for Attribute documentation
- Real-Time Tracking*
- Convert Line/Polygon Shapefiles back to Tracks*
- Calculates Circular Error Probable (CEP)*

* Advanced techniques taught later in class!

How it Works

- Outside of ArcView
- Inside of ArcView



Typical Use on a Fire



Download



Upload

- Data Transfer

ArcView GIS 3.3

File Edit View Theme Graphics Window Help

DNR Garmin

- Open Garmin GPS
- Set Projection
- Convert Points
- Calculate Shape Attributes
- Add Documentation
- Calculate CEP

Scale 1:34,713 767,186.17 3,372,775.05

FIRE DATA

- ☒ Florida_dof.shp
 - ☒ Florida DOF
 - ☒ Tom Brown P
- ☐ Lafdoq99nw.sid
- ☒ Lafayette drg.tif

MN DNR - Garmin

File GPS Waypoint Track RealTime Help

GPS III+ Software Version 2.06 VERBMAP Americas Highway Land Data 1.00

Lat Lon
Alt EPE

<<< Advanced >>>

	type	ident	lat	long	new_seg	time
1	TRACK		19.65261115	15.08022104	True	'19:18:2
2	TRACK		19.65258433	15.08016472	False	'19:18:2
3	TRACK		19.65257091	15.08014058	False	'19:18:2
4	TRACK		19.65255214	15.08010034	False	'19:18:2
5	TRACK		19.65254409	15.08008425	False	'19:18:2
6	TRACK		19.65252532	15.08004938	False	'19:18:2
7	TRACK		19.65251727	15.08003597	False	'19:18:2
8	TRACK		19.65250118	15.08000647	False	'19:18:2
9	TRACK		19.65249313	15.07998769	False	'19:18:2
10	TRACK		19.65247435	15.07994478	False	'19:18:2
11	TRACK		19.65245558	15.07990723	False	'19:18:2
12	TRACK		19.65243681	15.07986978	False	'19:18:2

Connected Loaded 1 tracks consisting of 52 points 0 of 52 Selected

Starts the Garmin GPS Program

Installation Requirements

- Hardware:
 - Garmin GPS III Plus Receiver
 - PC (Windows 95 or higher) with available Serial Port (COM Port)
 - Garmin PC Download Cable
- Software
 - ArcView 3.X
 - DNR Garmin

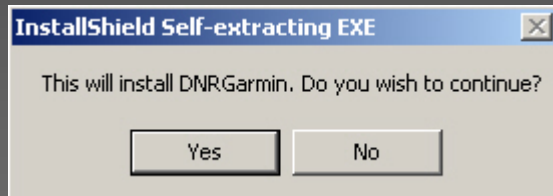
Installation Requirements

- Ensure ArcView 3.X is functioning properly
 - Go To: Start Button | Programs | Esri | ArcView3 | ArcView
 - Confirm ArcView runs
 - Exit Program
- Proceed to DNR Garmin Installation

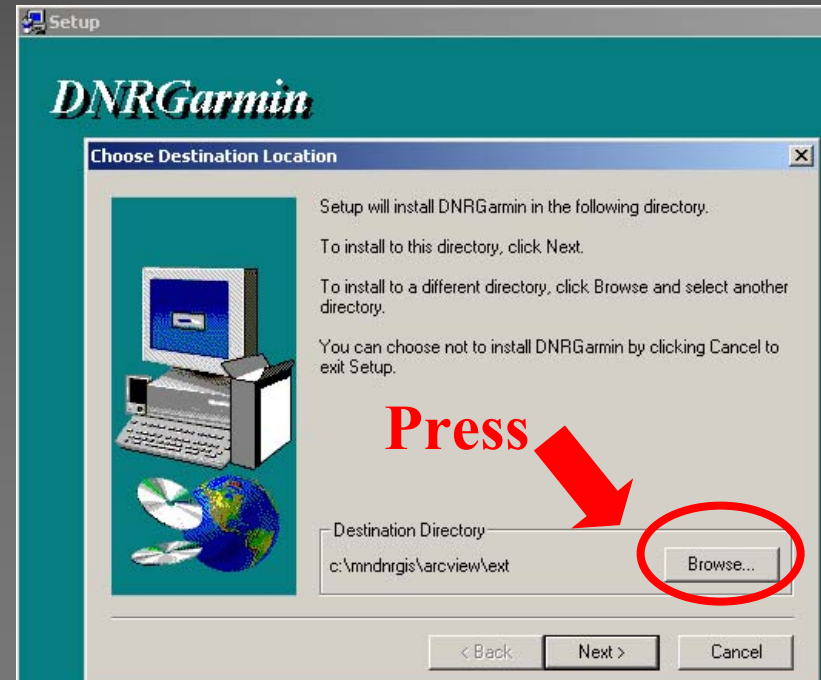


DNR Garmin Installation

- Installation
 - Navigate to /Software/DNRGarmin. Find on Training CD or local copy
 - Double-Click GarminSetup.exe

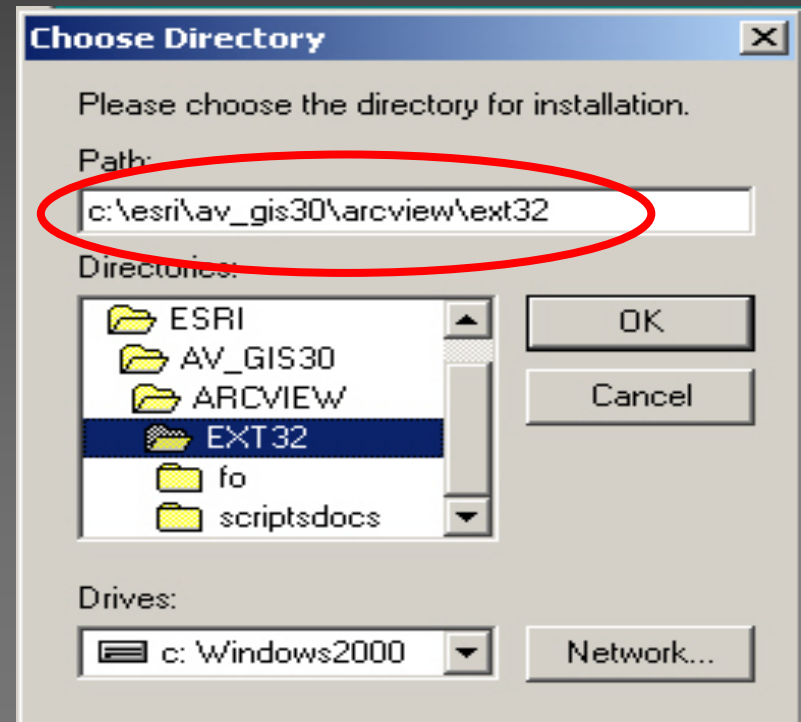


- Execute the Program
- Need to Change the Destination Directory
- Press Browse



Installation

- Download DNR Garmin cont.
 - Navigate to the c:/esri/av_gis30/arcview/ext32 directory*
 - Press OK
- Continue Installation
 - Click Next
 - Accept Typical Installation
 - Click Next to Install



DNR Garmin Summary

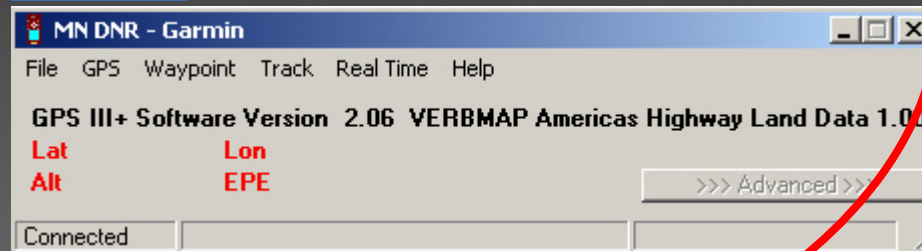
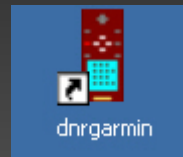
- Overview of DNR Garmin capabilities
- Installed 10 files including ArcView extension and help file in
c:/esri/av_gis30/arcview/ext32 directory
- Installed the DNR Garmin program on the PC desktop
- Congratulations!



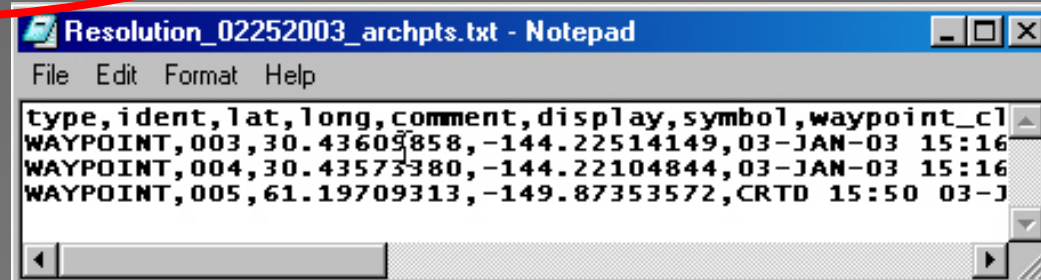
DNR Garmin Program: Download Waypoints



**Collect
Data**



DNR Garmin



Fire Data

Objectives

- Getting Connected
 - Opening DNR Garmin Outside of ArcView
- Download Waypoints
- Basic Waypoint Table Edits
- Save GPS Data as TEXT File
- Confirm File Naming Convention

Getting Connected - Step 1

- Connect GPS unit to PC




- Start Receiver
 - Push the ON button
 - Push the MENU button twice
 - Scroll down to SETUP
 - Push ENTER
 - Scroll left to the SIMULATOR tab




Waypoints	Main Menu
Cities	
Nearest	
Routes	
Track Logs	
Trip Computer	
Setup	

- Change Simulator Mode to On



Simulator	System	Units	Time
Mode		Speed	
Simulator Off		----- ^m / _h	
Track Control		Track	
Auto Track		---- [°] / _T	
Altitude/Elevation			
----- ^f / _T			



Simulator	System	Units	Time
Mode		Speed	
Simulator On		0.0 ^m / _h	
Track Control		Track	
Simulator Off Simulator On		000 [°] / _T	
170 ^f / _T			

- Check Interface Protocol

- Scroll up to Simulator Tab
- Scroll right to the INTERFACE tab

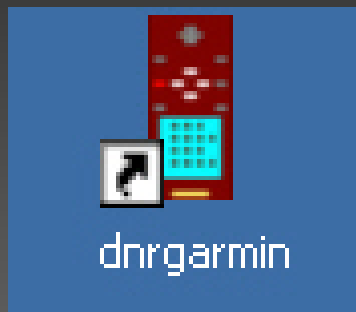
Simulator	System	Units	Time
Mode		Speed	
Simulator On		0.0%	
Track Control		Track	
Auto Track		000%	
Altitude/Elevation			
170%			



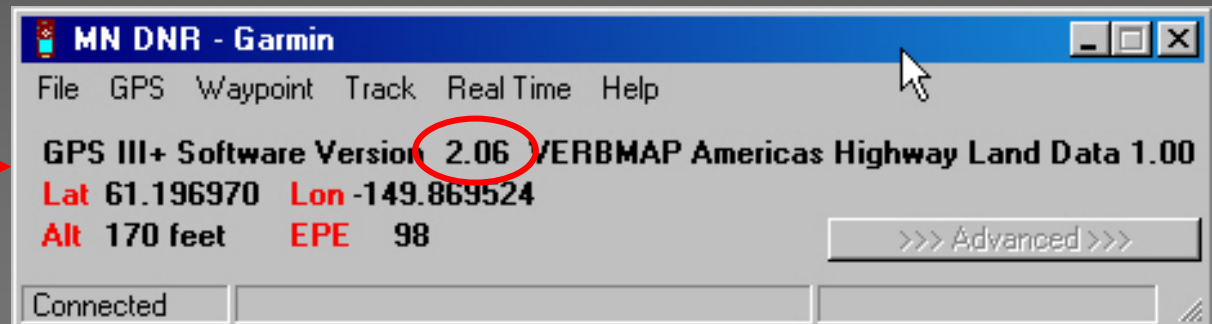
One	Alarms	Position	Interface
Format		Transfer Mode	
GARMIN		Host	
Status			
Ready			

Getting Connected - Step 2

- Double-Click DNRGarmin shortcut on Desktop



VB Program



**Current GPS III+ Version
Recommended for Class**

Troubleshooting Tips

- Check the following if connection cannot be made
 - Cables are securely attached
 - Interface on receiver is set to Garmin
- VB Menu Option GPS
 - These options set up communication protocols with GPS
 - Select GPS | Assign Port and Select other COM port*
 - Select GPS | Open Port to establish connection



* ActiveSync or other peripherals may be using same port

Download Waypoints to Text File

- Select Waypoint | Download
- Click <<<Advanced<<< button to see entire table
- Data is Lat/Long in Decimal Degrees
- Datum is WGS84*

* WGS84 is a result of setting Interface to Garmin and is the native language of GPS

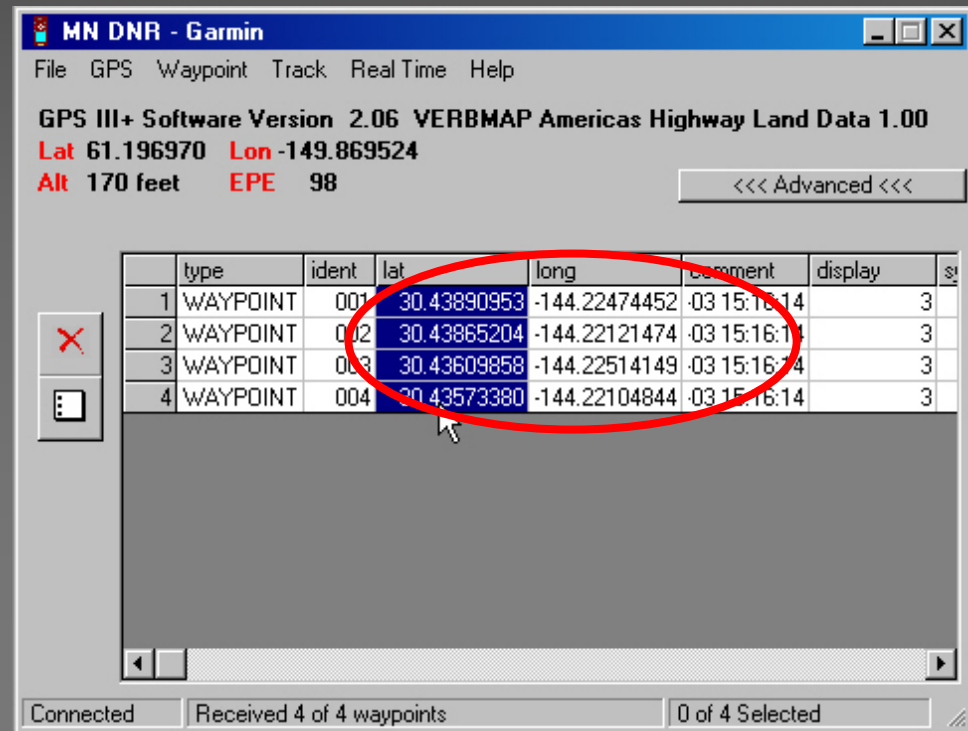


Table Edit Techniques

- Important Fields:
 - TYPE: Type of point this represents
 - IDENT: 6 characters defining name (defaulted here to Garmin's AutoNumber)
 - LAT/LONG: Latitude / Longitude in WGS84 Datum
 - COMMENT: 16 characters stored with Waypoint only



TIP “CRTD” in
Comment field
stands for Created

The screenshot shows the 'MN DNR - Garmin' software window. The title bar is blue with the text 'MN DNR - Garmin'. Below the title bar is a menu bar with 'File', 'GPS', 'Waypoint', 'Track', 'RealTime', and 'Help'. The main area displays 'GPS III+ Software Version 2.06 VERBMAP Americas Highway Land Data 1.00'. Below this, it shows 'Lat 61.196970 Lon -149.869524' and 'Alt 170 feet EPE 98'. A button labeled '<<< Advanced <<<' is on the right. At the bottom, there is a table with 8 columns: 'type', 'ident', 'lat', 'long', 'comment', 'display', and 's'. The table contains 4 rows of waypoints. A mouse cursor is pointing at the 'lat' column of the 4th row.

	type	ident	lat	long	comment	display	s
1	WAYPOINT	001	30.43890953	-144.22474452	03 15:16:14		3
2	WAYPOINT	002	30.43865204	-144.22121474	03 15:16:14		3
3	WAYPOINT	003	30.43609858	-144.22514149	03 15:16:14		3
4	WAYPOINT	004	30.43573380	-144.22104844	03 15:16:14		3

Table Edit Techniques

- Editing Table Information

- Double-Clicking on Cell - Modifies Cell Value

*You could move the
waypoint if you wanted to!*

30.43865204

- Deleting Records

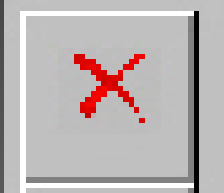
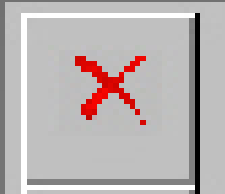
5	WAYPOINT	005	30.43865204	-114.55151414	03/12/14	3
---	----------	-----	-------------	---------------	----------	---

- Deleting Columns

ident
001
002
003
004

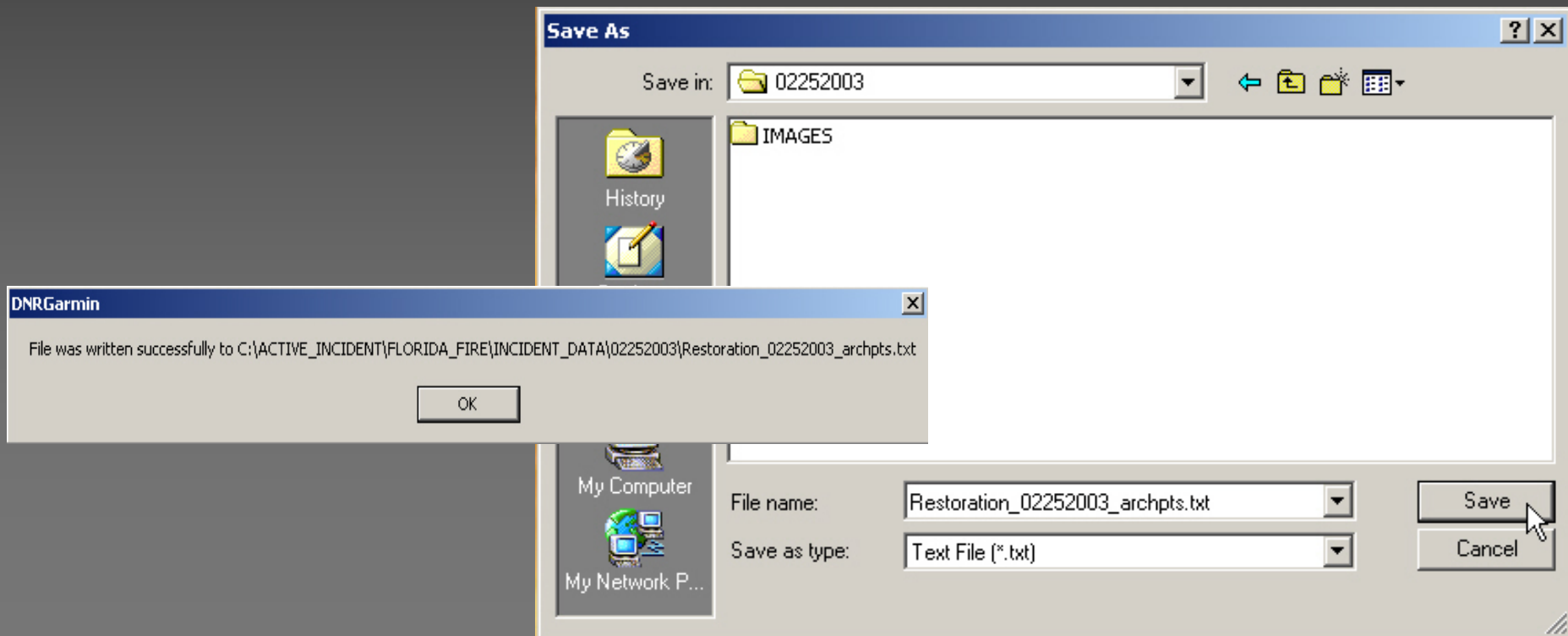
- To Select multiple columns or rows, hold down mouse and drag

Table Edit Techniques

- Edit Restoration Fire Scenario Data
 - Delete 2nd Archeological Site (remove row two)
 - Highlight **Row 2**
 - Click  to delete selected row
 - Delete extraneous column data
 - Highlight “**unused1**” column
 - Left mouse drag left to “depth”
 - Click  to delete selected columns

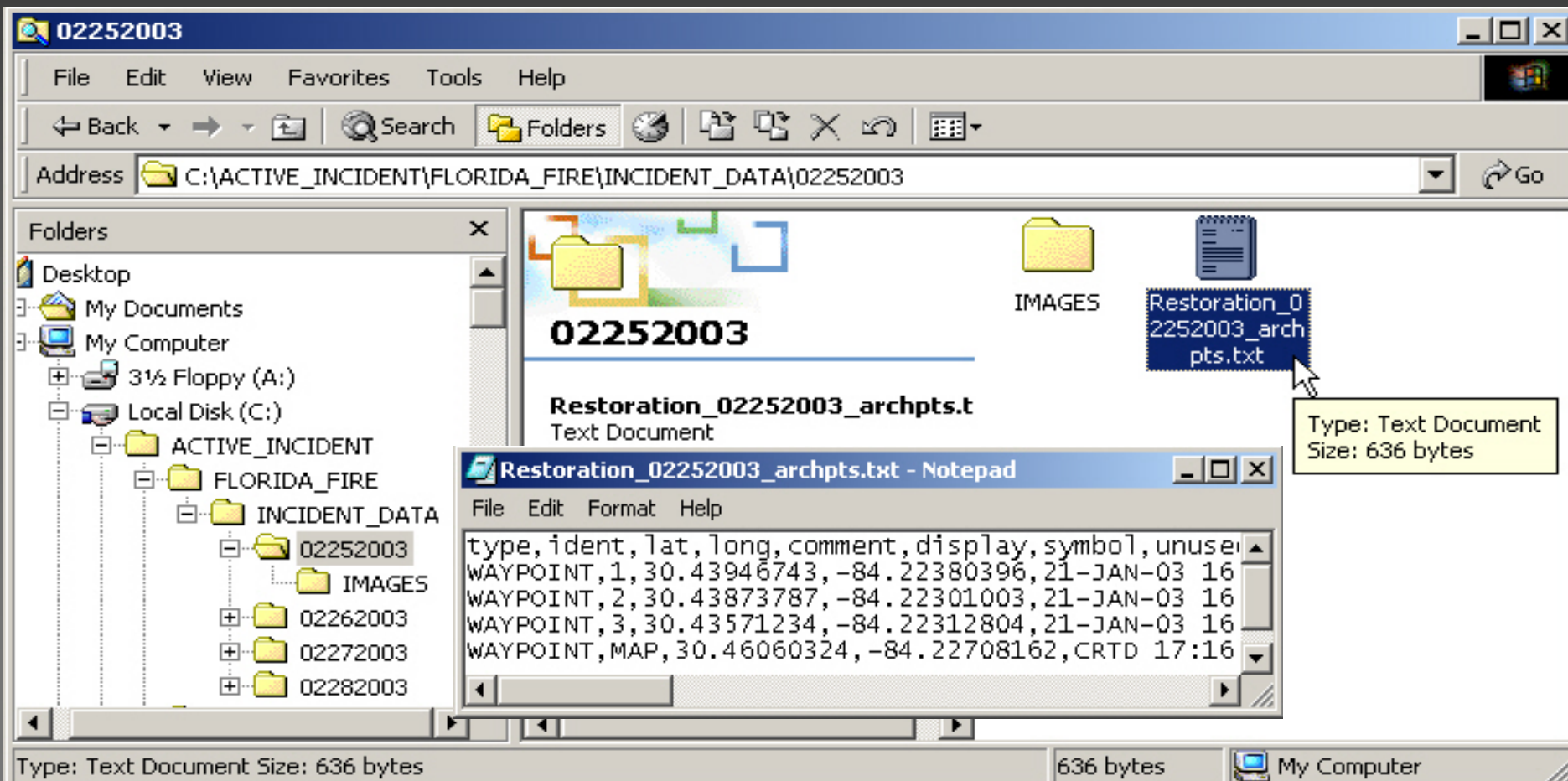
Save Waypoints to Text File

- Select File | Save As | GPS Text File...
- Save As: See Instructors Guidelines



Confirm Directory Structure

- Example shown here for the Restoration Fire at Tallahassee Florida Training



Review

DNR Garmin is two programs in one

1.) VB Program outside of ArcView

2.) ArcView 3.x extension

- VB Program can save .txt file or shapefile
 - coordinates in Latitude/Longitude Decimal Degrees, WGS84 datum ONLY
- ArcView extension can save as graphic or shapefile
 - has shapefile projection and datum change capabilities

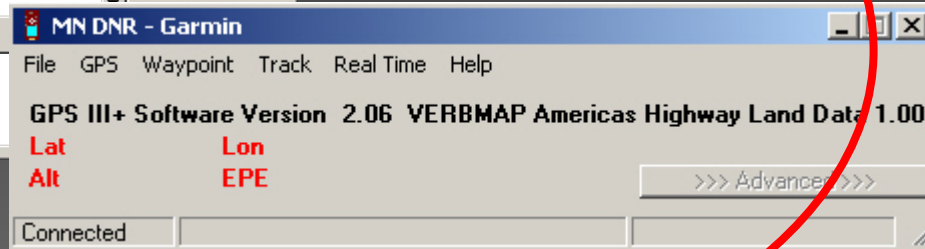
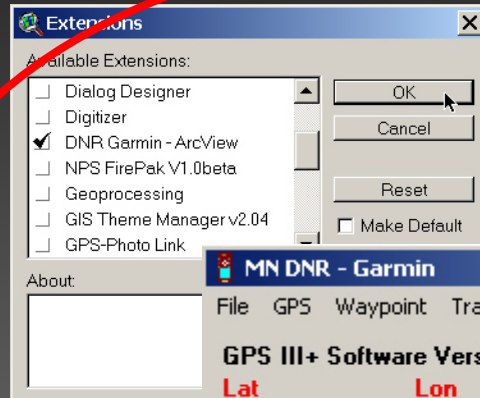
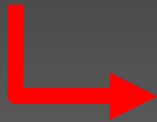
Summary

- Connected successfully to the GPS
- Used DNR Garmin Program
 - Outside of ArcView
- Edited simple Waypoint Data
- Saved as Text File
- Confirmed location of file on PC

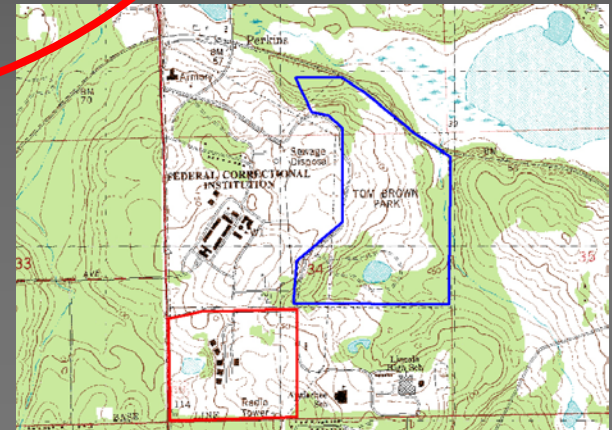
DNR Garmin Extension in ArcView: Set up



Collect
Data



DNR Garmin



ArcView

Objectives

- Getting Connected
 - Open ArcView a new project
 - Set View Properties
 - Load the DNR Extension
 - Opening DNR Garmin Inside of ArcView
- Overview Menu Options
- Help Review

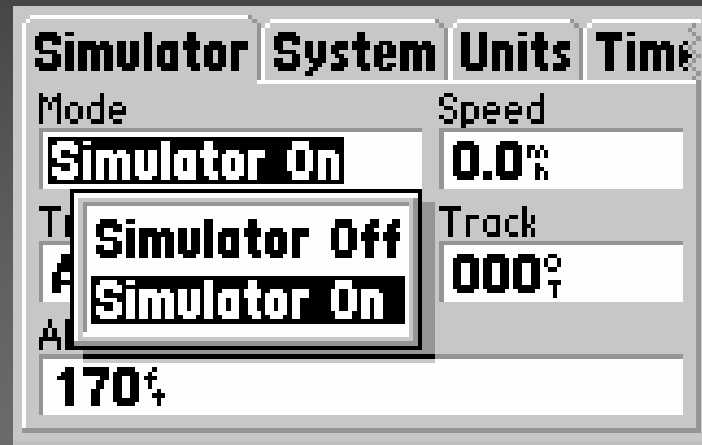
Getting Connected - Check

- Turn on
Garmin GPS
- For best results, the Garmin GPS should be connected to the computer via a serial cable and turned on before loading the DNR Garmin extension.



Getting Connected - Check

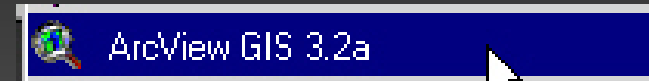
- Simulator Mode to On



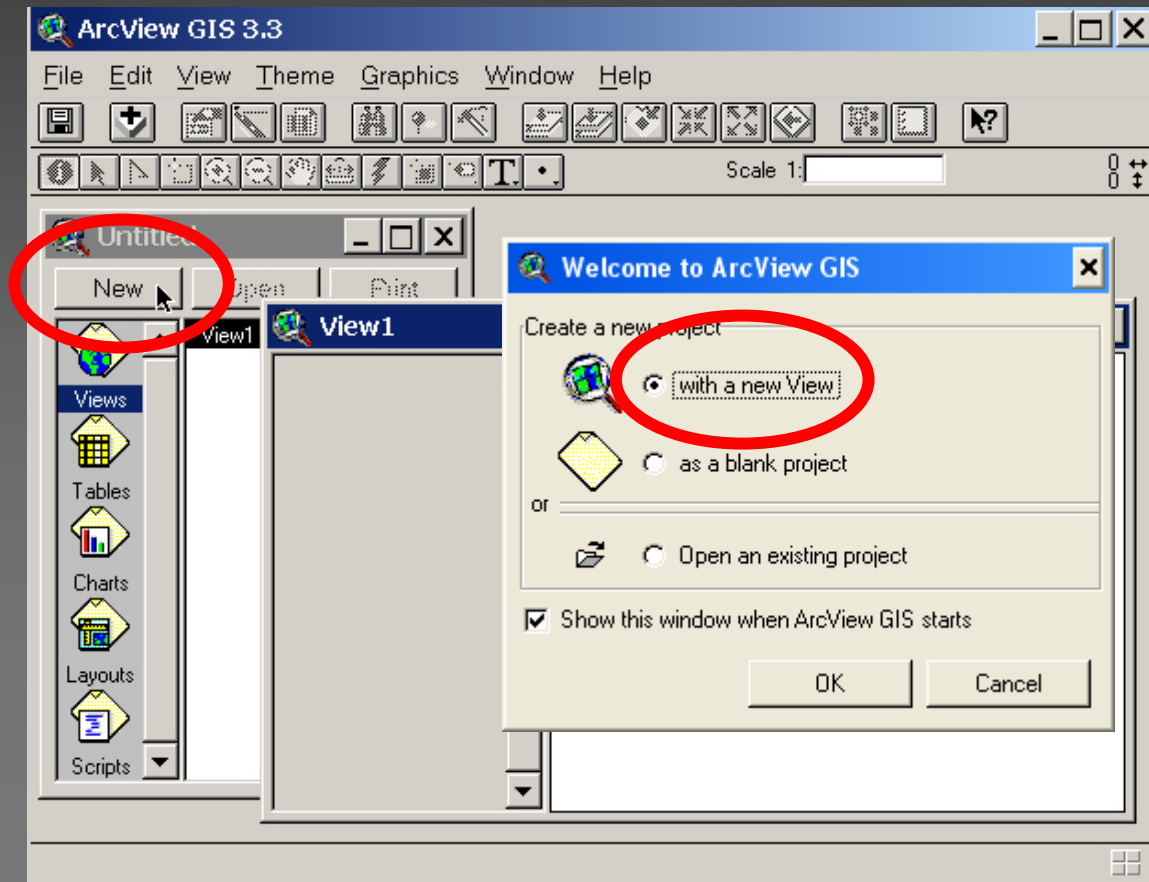
TIP Garmin GPS returns to Simulator Off during power up

Getting Connected - Step 1

- Start ArcView
 - Start Button | Programs | ESRI | ArcView3 | ArcView

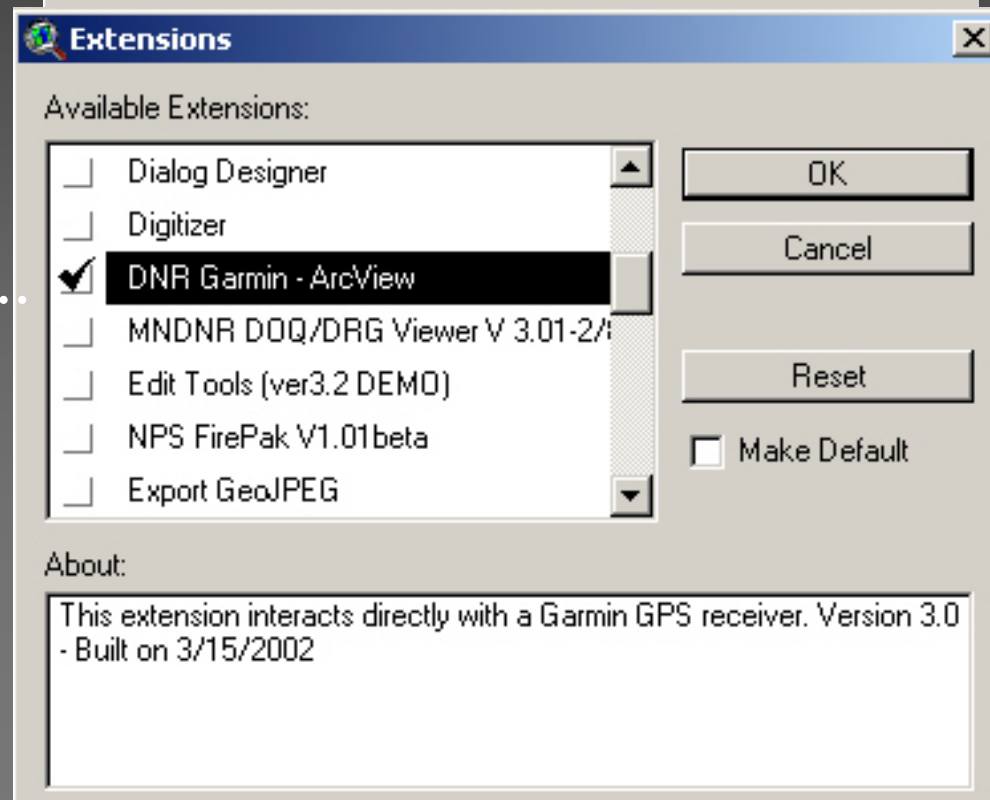
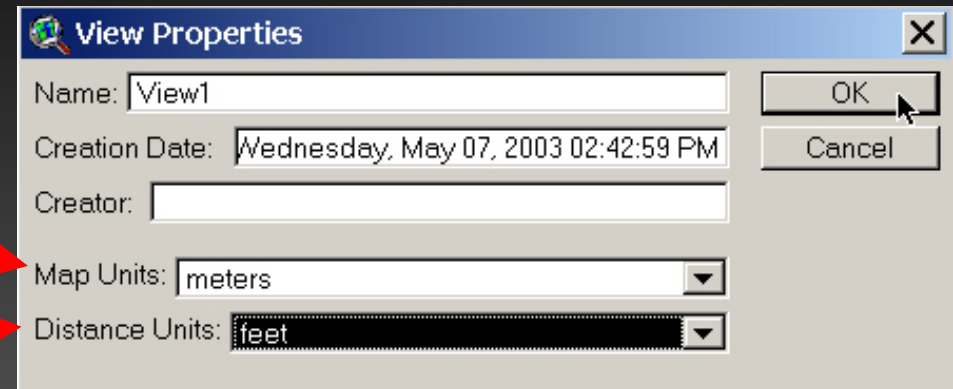


- Open an ArcView
 - New View
- Or...
- “with a new View”
when dialog box inquires



Getting Connected - Step 1

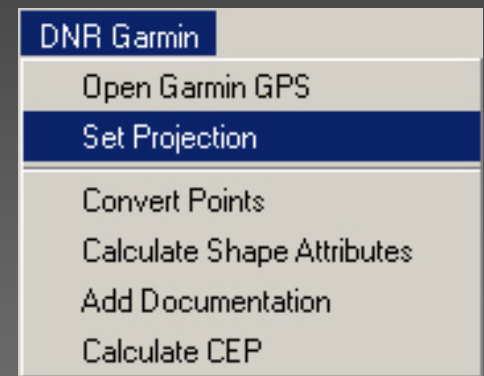
- Set View | Properties
 - Map Units: meters
 - Distance Units: feet
- Load DNR Garmin Extension
 - Select File | Extensions...
 - Scroll to Select
“DNR Garmin - ArcView”
 - Press OK



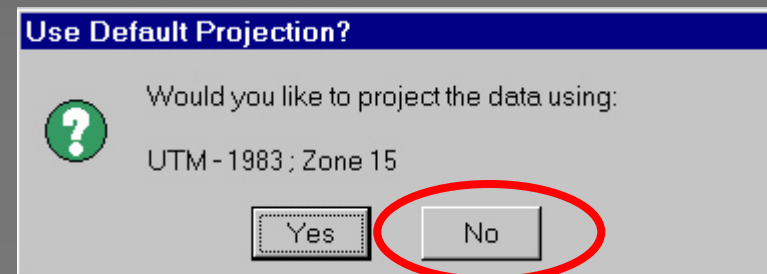
Getting Connected - Step 2

- Set Projection

- Since some of you may already have loaded DNR Garmin, we need to ensure the Projection is set
- Select DNR Garmin | Set Projection

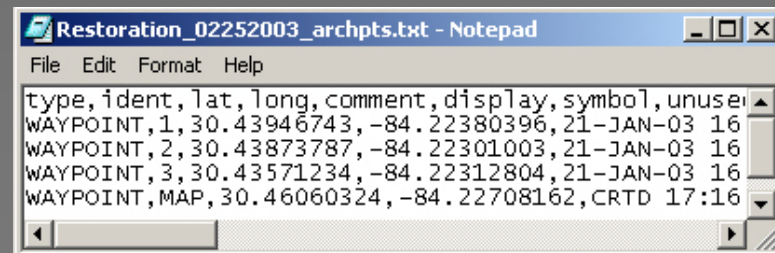


- This may **not** be the correct projection and datum, Press NO
- Set parameters to the Class Instructions



Projections - What's the big deal anyway!

- To GIS personnel - this is a big deal
- Intimately linked to the data collection from the field
- Ask how the GIS personnel prefers the data
- All raw GPS data is expressed in Lat/Long Decimal Degrees - WGS84 Datum
 - Setting Garmin to Garmin Protocol ensures data arriving in downloaded as DD WGS84

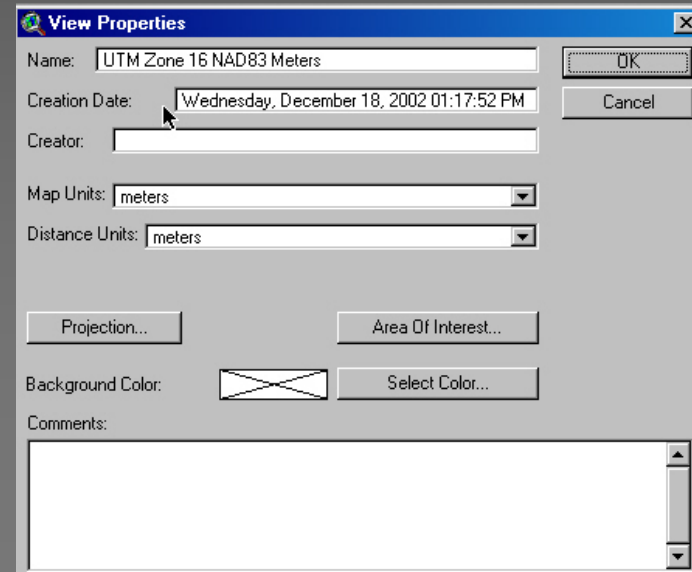


The screenshot shows a Notepad window titled "Restoration_02252003_archpts.txt - Notepad". The window contains a table of GPS data with columns: type, ident, lat, long, comment, display, symbol, and unused. The data includes three waypoints and a map point, all in decimal degrees WGS84 datum.

type	ident	lat	long	comment	display	symbol	unused
WAYPOINT	1	30.43946743	-84.22380396	21-JAN-03	16		
WAYPOINT	2	30.43873787	-84.22301003	21-JAN-03	16		
WAYPOINT	3	30.43571234	-84.22312804	21-JAN-03	16		
WAYPOINT	MAP	30.46060324	-84.22708162	CRTD 17:16			

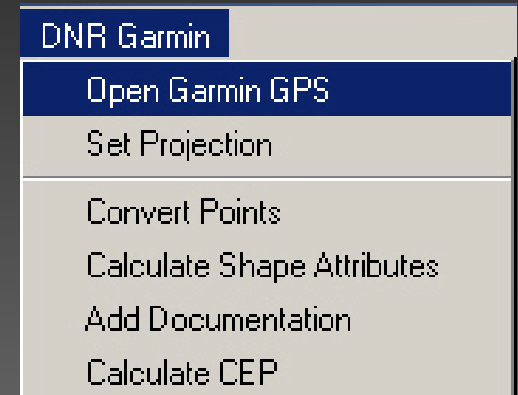
Projections - What's the big deal anyway!

- When GPS data is downloaded to ArcView the data is projected “on the fly” using the projection you define using:
 - DNRGarmin | Set Projection Dialog box
 - Information is stored in a file and can be reset at any time
- This assumes the base data is projected and is being displayed in an unprojected View.

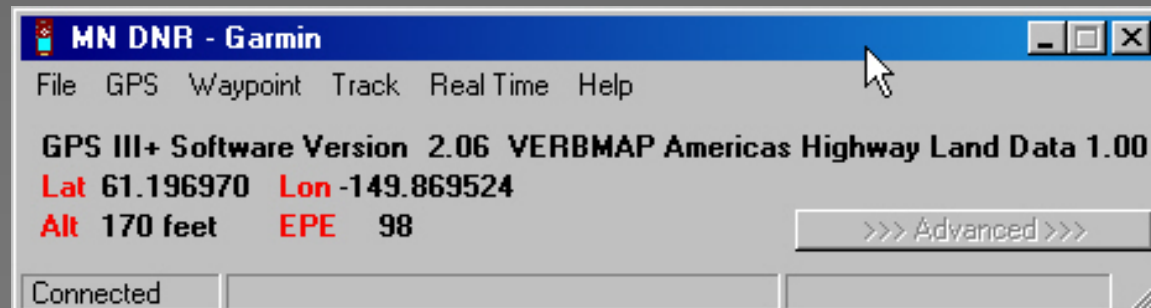


Getting Connected - Step 3

- Open DNR Garmin - Select DNR Garmin | Open Garmin GPS



- If GPS is turned on you will see this
- Congratulations!

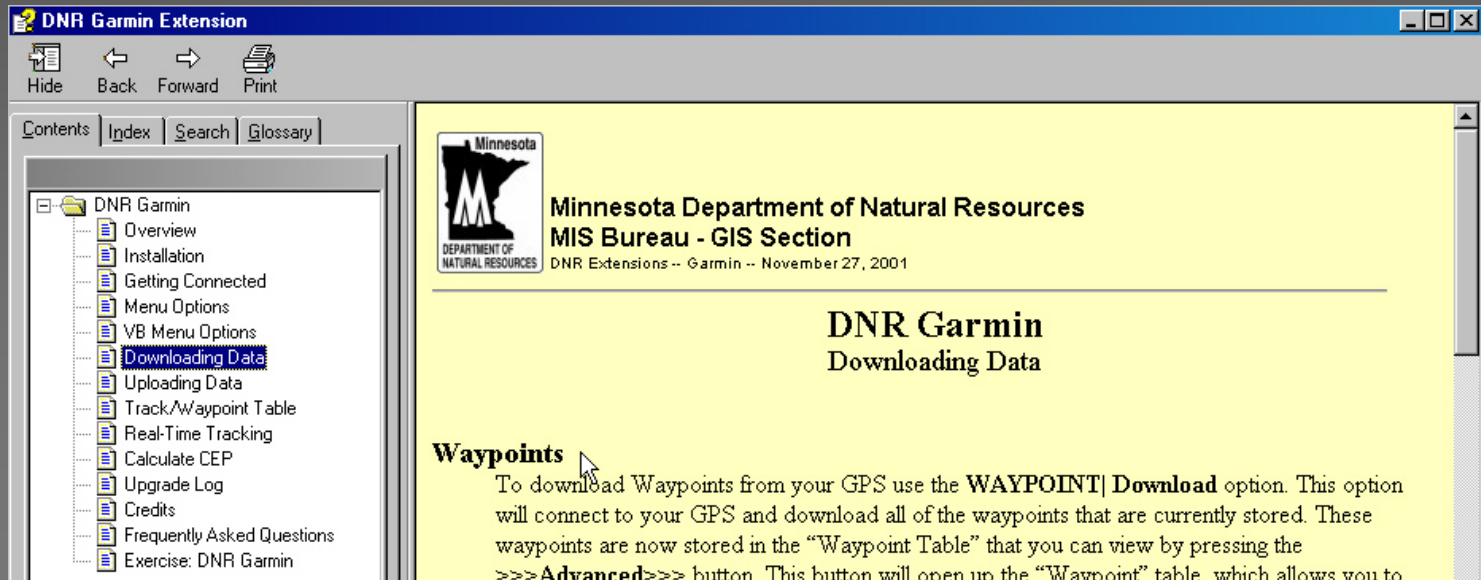
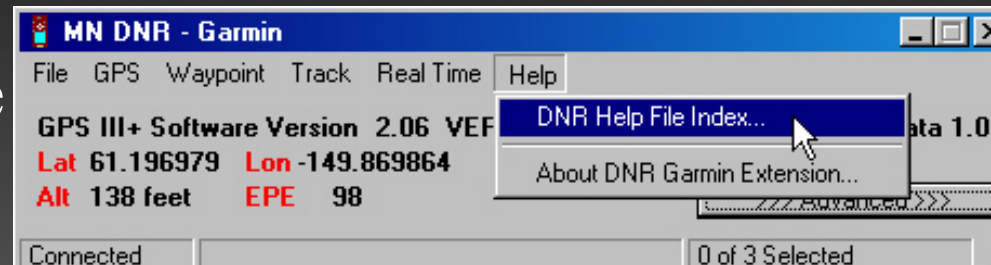


Overview DNR Garmin Menu

- OPEN Garmin GPS: Starts the DNR Garmin Program
- Set Projection: Sets the Projection for Incoming Data
- Convert Points: Convert Point shapefile to line or polygon
- Calculate Shape Attributes: Calculates attributes of shapefile (GIS units) and adds them to the attribute table.
- Add Documentation
- Calculate CEP: Calculates Circular Error Probability for the Selected Point Theme

DNR Garmin Help

- Open DNR Help
- Select Help | DNR Help File Index
- Select “Downloading Data” from the Contents Tab
- Close Help



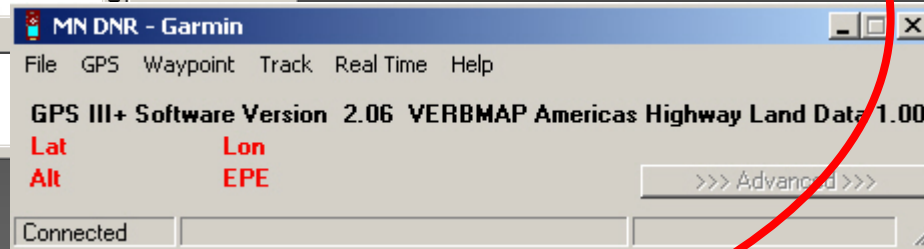
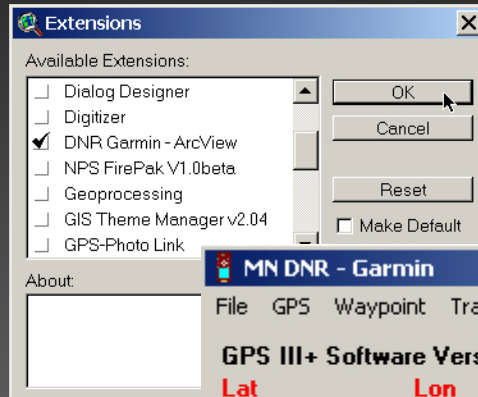
Summary

- Connected successfully to the GPS
- Used DNR Garmin Program (extension)
 - INSIDE of ArcView
- Reviewed basic capabilities in DNR Garmin Menu
- Launched DNR Garmin Help

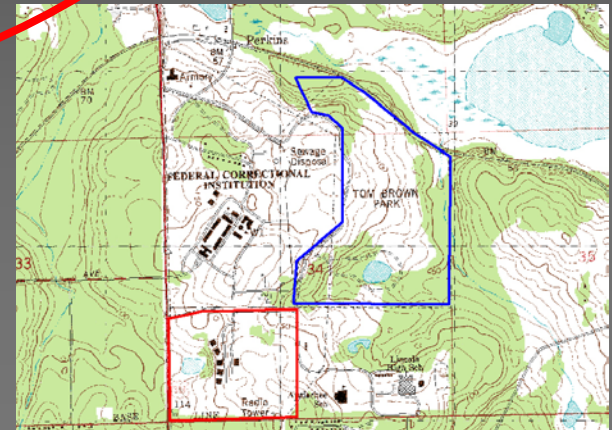
DNR Garmin & ArcView: Waypoint and Track Download



**Collect
Data**



DNR Garmin



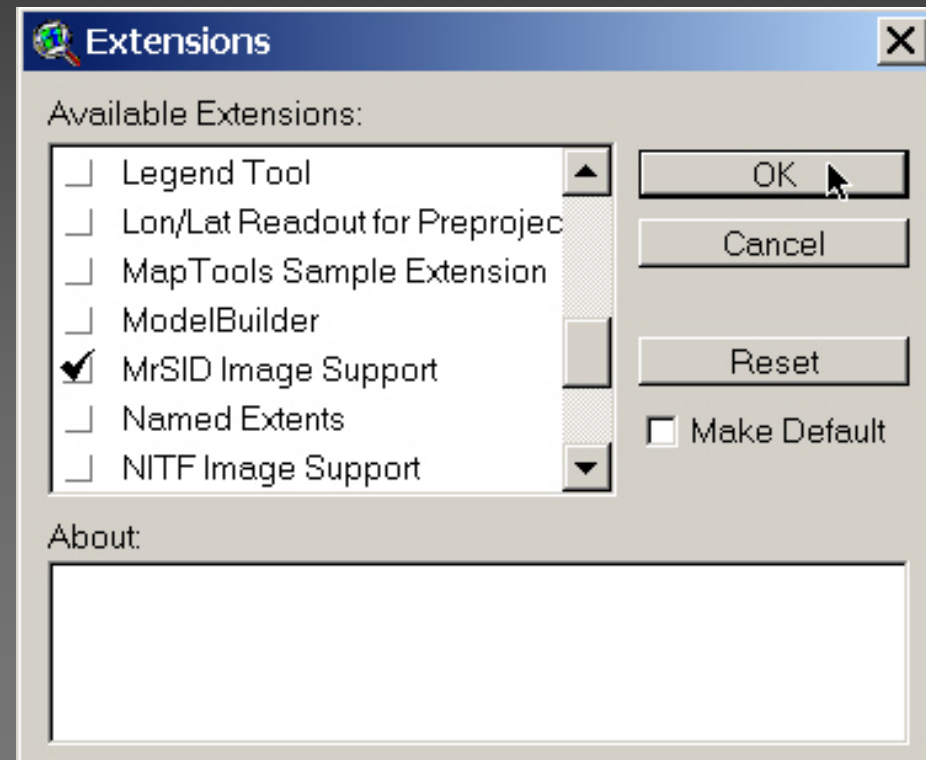
ArcView

Objectives

- Add Themes to View
- Download Waypoints and Tracks with the DNR Garmin extension in ArcView
- Basic Waypoint and Track table edit with DNR Garmin
- Save Waypoints and Tracks as ArcView Shapefiles

Add Themes to View

- We can add an image theme (background) to the view
- Load MrSID Extension
 - Select File | Extensions...
 - Scroll to Select
“MrSID Image Support”
 - Press OK



Add Themes to the View

- Add Image Themes from Incident Folder

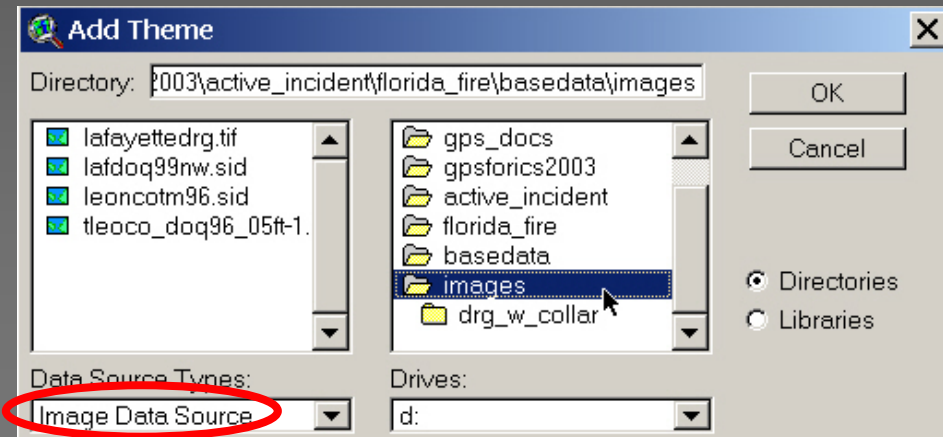
- Add Theme Button  or...

- View | Add Theme

- Look in
ACTIVE_INCIDENT/BASE
DATA/IMAGES folder

- Change Data Source Type to
Image Data Source

- Add themes (e.g.,
wicadrg.sid, wicadoqq.sid)



Add Themes to the View

- Add Vector (feature) Themes from Incident Folder

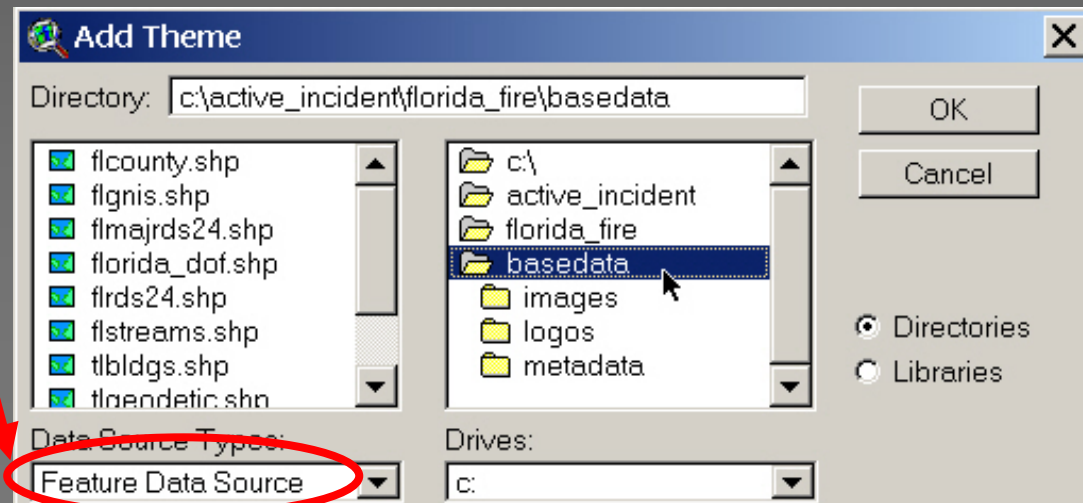
- Add Theme Button  or...

- View | Add Theme



- Look in
ACTIVE_INCIDENT/BASE
DATA/SHAPEFILES
folder for feature data

- Add theme
(e.g., wicatrll.shp)
- Add others



Download Waypoints into ArcView

- Select Waypoint | Download
- Click <<<Advanced<<< button to see entire table

The screenshot shows the ArcView GIS 3.3 interface. The main window displays a map of Florida with a legend on the left. The legend includes 'Florida_dof.shp' (checked), 'Florida DOF' (red outline), 'Tom Brown Park' (blue outline), 'Tleoco_dog96_05ft-1.sid' (unchecked), and 'Lafayette.drg.tif' (checked). The map is labeled 'UTM Zone 16 NAD83'.

Overlaid on the map is the 'MN DNR - Garmin' window. This window has a menu bar with 'File', 'GPS', 'Waypoint', 'Track', 'Real Time', and 'Help'. It displays the following information:

- GPS III+ Software Version 2.05
- VERBMAP Americas Highway Land Data 1.00
- Lat 45.037226 Lon -92.835459
- Alt 304.2 meters EPE 30

Below this information is a button labeled '<<< Advanced <<<'. A mouse cursor is clicking on this button. Below the button is a table with the following data:

	type	ident	lat	long	comment	display
1	WAYPOINT	1	30.43489695	-84.22258624	-03 16:45:20	
2	WAYPOINT	2	30.43489695	-84.21938905	-03 16:45:20	
3	WAYPOINT	3	30.43708563	-84.22025808	-03 16:45:20	
4	WAYPOINT	4	30.43689251	-84.22135779	-03 16:45:20	

Below the table is a small dialog box titled 'DNRGarmin' with the message 'Received 4 records.' and an 'OK' button.

At the bottom of the ArcView window, there is a status bar with the following text: 'Connected', 'Received 4 of 4 waypoints', and '0 of 4 Selected'.



Table Edit Techniques

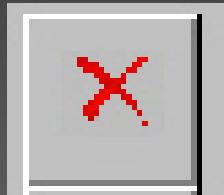
- Edit Waypoint Data

- Delete 2nd Archeological Site (Remove Row two)

- Highlight row

	type	ident	lat	long	comment	display	sym
1	WAYPOINT	1	30.43489695	-84.22258624	-03 16:45:20	3	
2	WAYPOINT	2	30.43489695	-84.21938905	-03 16:45:20	3	
3	WAYPOINT	3	30.43708563	-84.22025808	-03 16:45:20	3	
4	WAYPOINT	4	30.43689251	-84.22135779	-03 16:45:20	3	

- Click



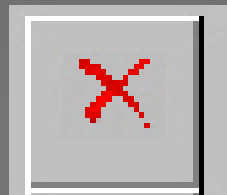
to delete selected row

- Delete extraneous column data

- Highlight “unused1” column
 - Left mouse drag left to “depth”

	altitude	depth	waypoint_cl	sub_class	attrib	link	st
1	0	0	0		0		
2	0	0	0		0		
3	0	0	0		0		

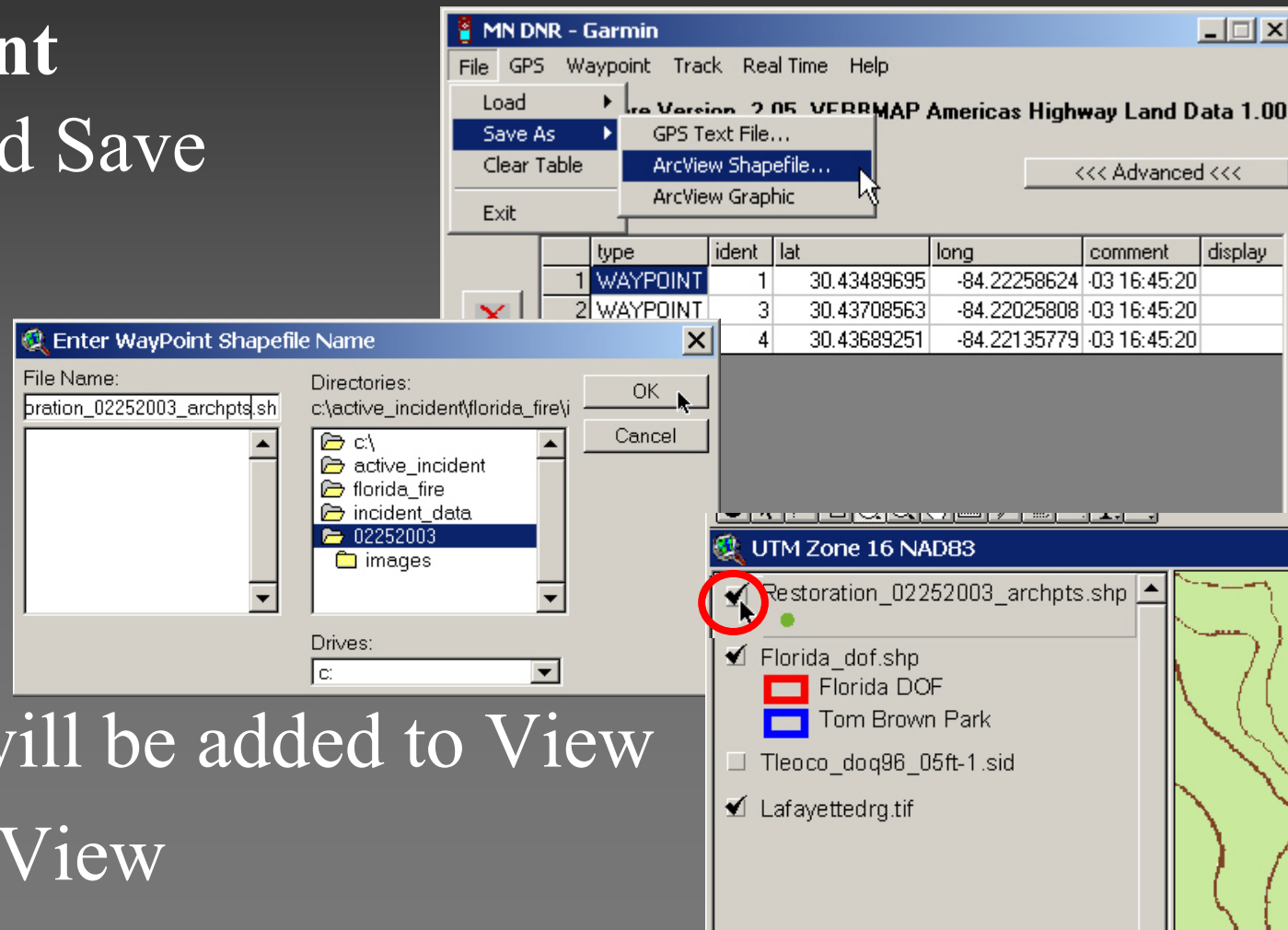
- Click



to delete selected columns

Save as ArcView Shapefile

- Select File | Save As | ArcView Shapefile
- Output **Point**
- Rename and Save Shapefile



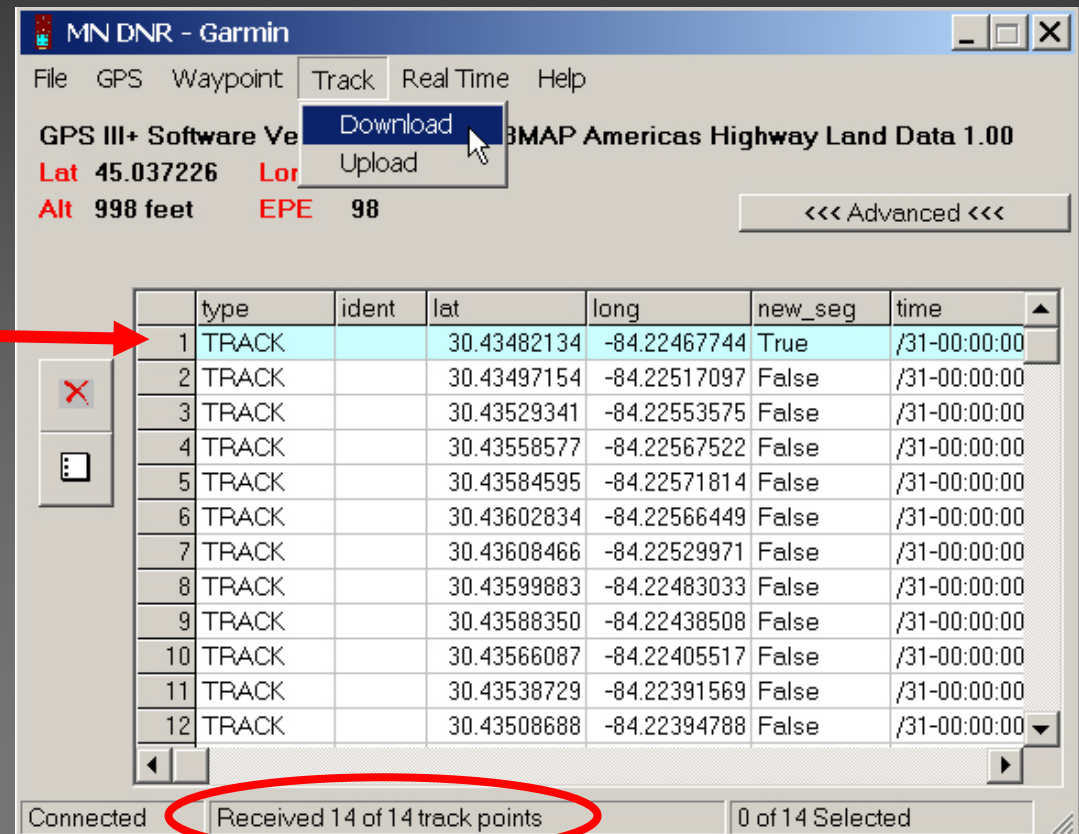
- Shapefile will be added to View
- Turn on in View

Download Track into ArcView

- Select Tracks | Download
- <<<Advanced<<<

What's with the blue?

This is an indication of a “new” track. This signifies a break in sequence of track point data collection based on date and/or time.



Download Track into ArcView

- Delete Track Data
 - Delete extraneous columns

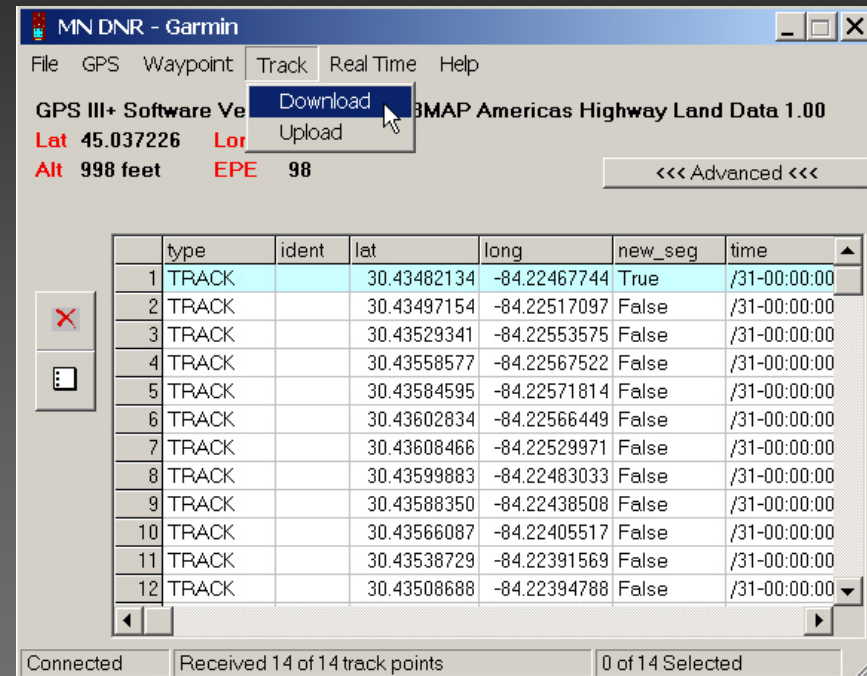
- Highlight column



ident
001
002
003
004

- Left mouse drag for multiple selection

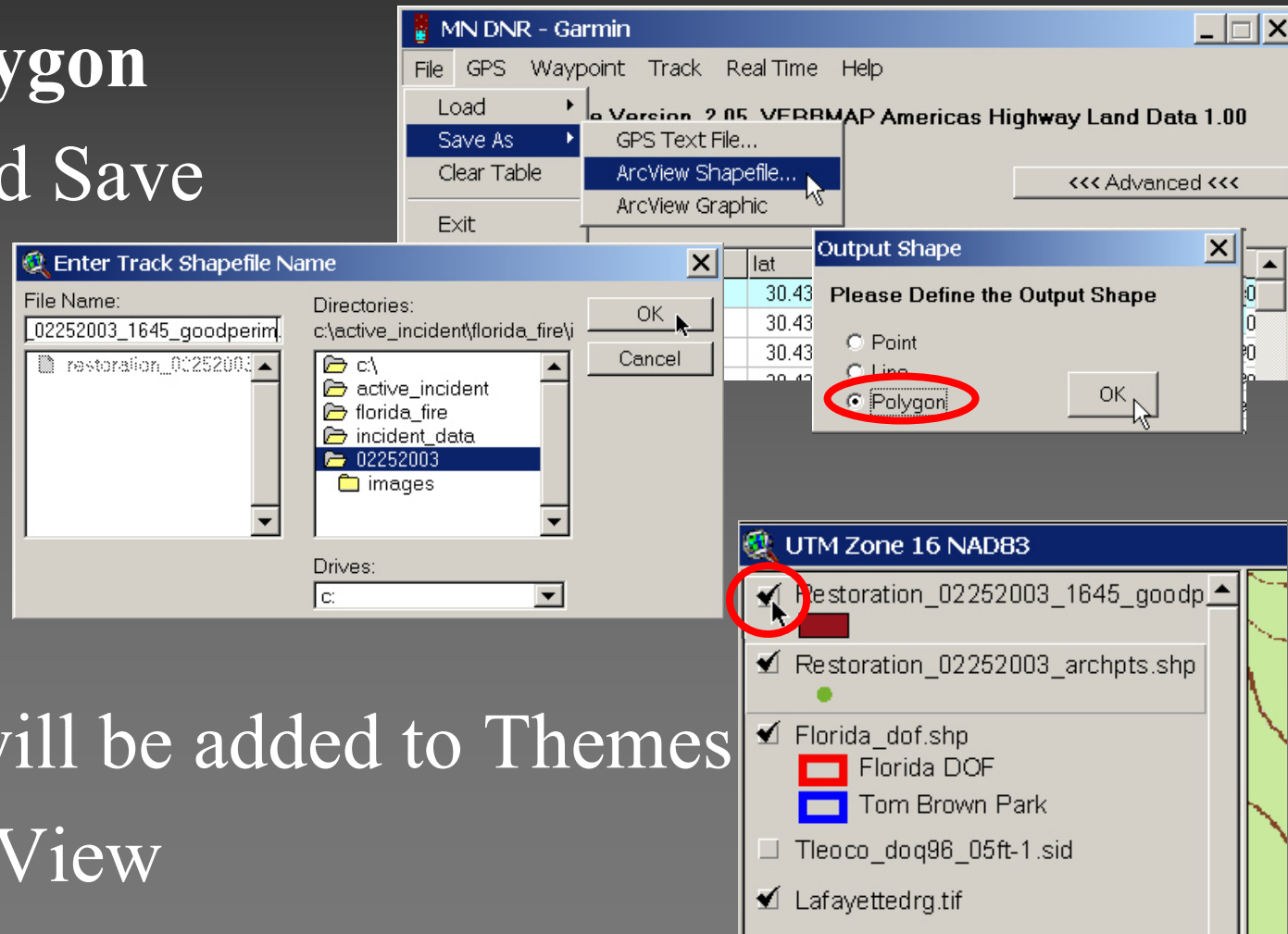
- Click  to delete selected columns





Save as ArcView Shapefile

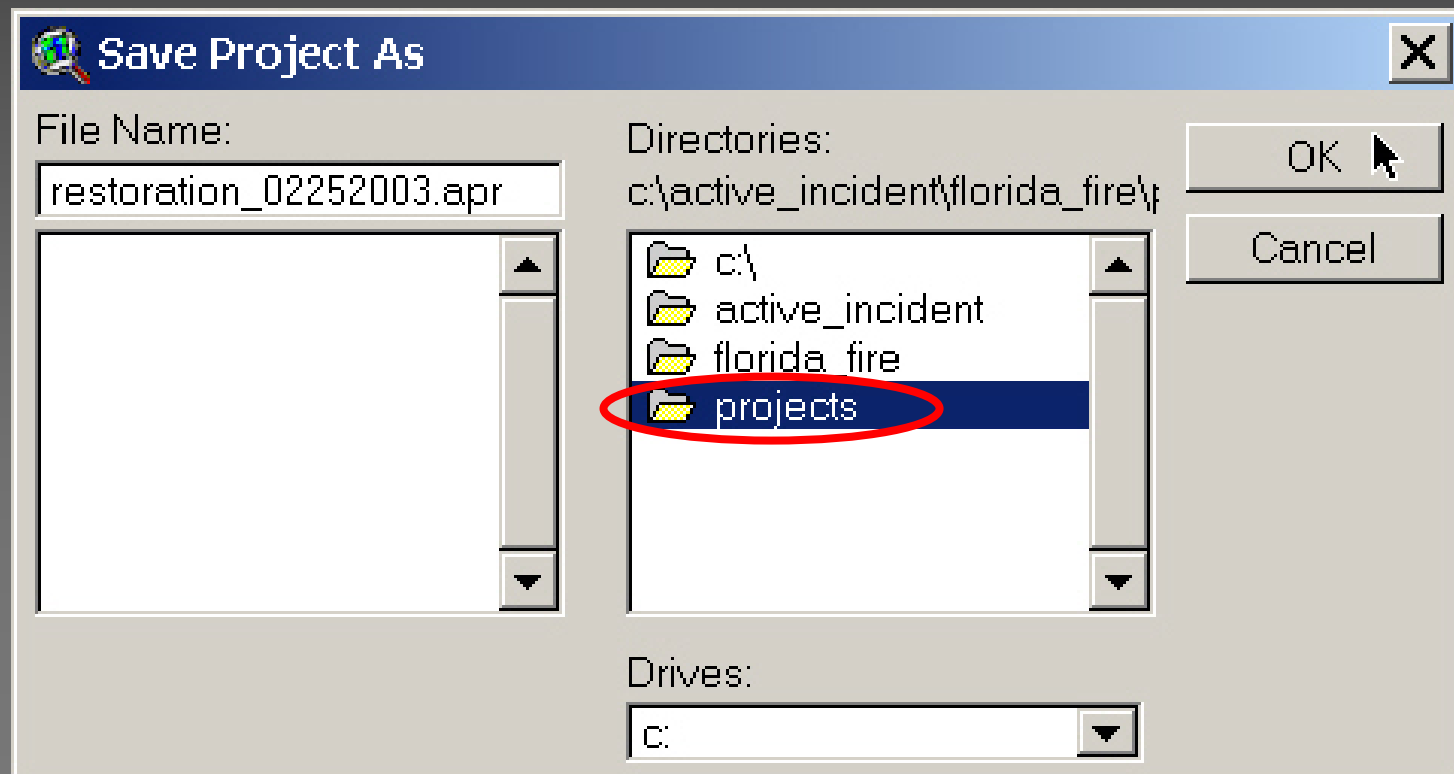
- Select File | Save As | ArcView Shapefile
- Output **Polygon**
- Rename and Save Shapefile



- Shapefile will be added to Themes
- Turn on in View

Save ArcView Project

- File | Save Project As...
 - Browse to Projects folder
 - Name with incident name and date
 - OK



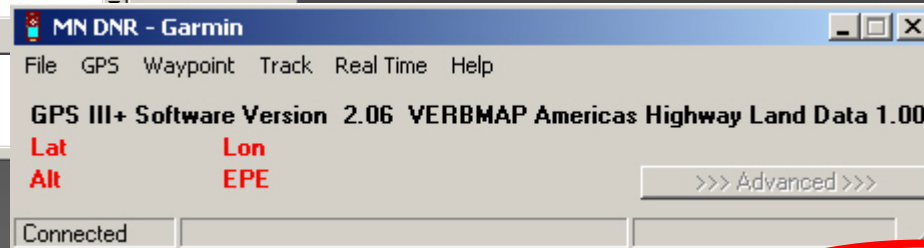
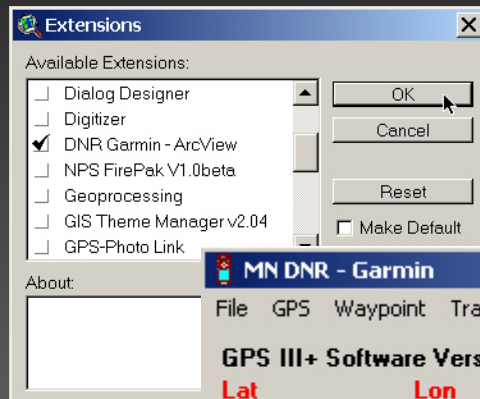
Summary

- Added Themes to View
- Downloaded Waypoints and Tracks with the DNR Garmin extension in ArcView
- Edited the Waypoint and Track tables with DNR Garmin
- Saved Waypoints as ArcView Point Shapefile and Track as ArcView Polygon Shapefiles

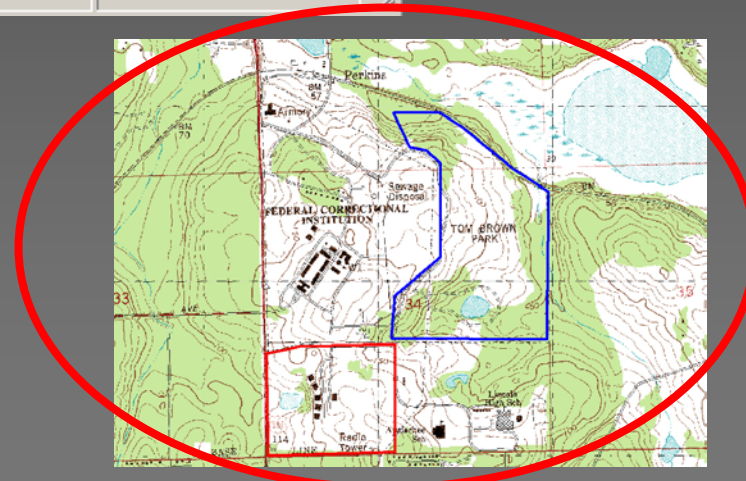
ArcView: Basic Editing



**Collect
Data**



DNR Garmin



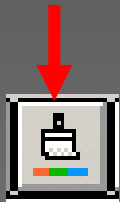
ArcView

Objectives

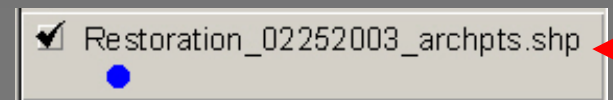
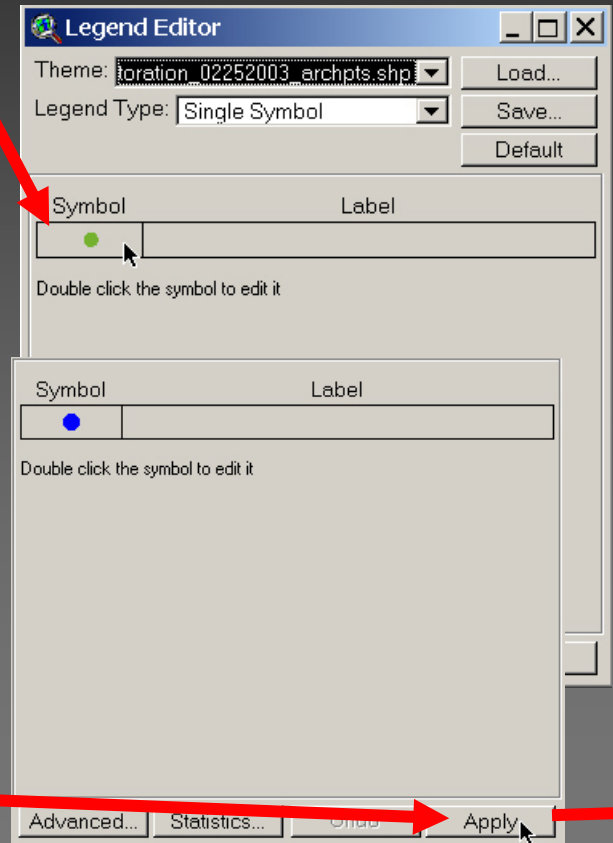
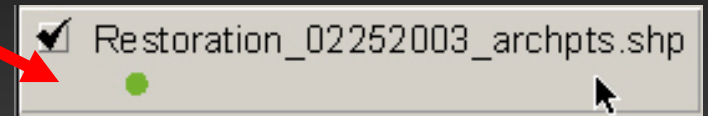
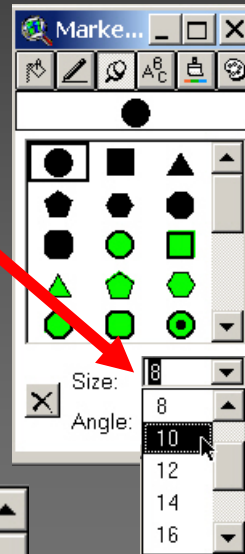
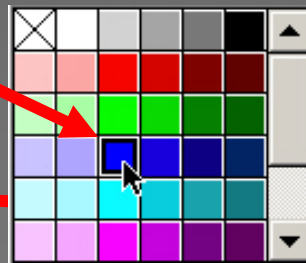
- Edit the View legend for point and polygon themes
- Calculate attributes for shapefile with DNR Garmin
- Document shapefiles with DNR Garmin
- Print or save a “map”
- Install AlaskaPak Extension
- Turn on AlaskaPak in ArcView
- Calculate Polygon Acreage and Perimeter Miles
- Create a Layout with the AlaskaPak Layout Wizard

Edit Legend: Point Theme

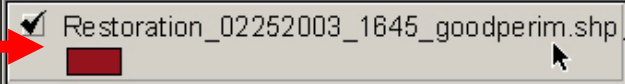
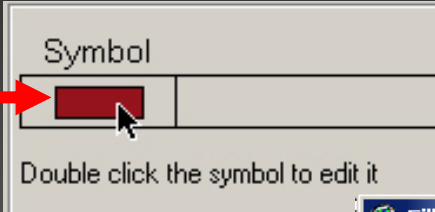
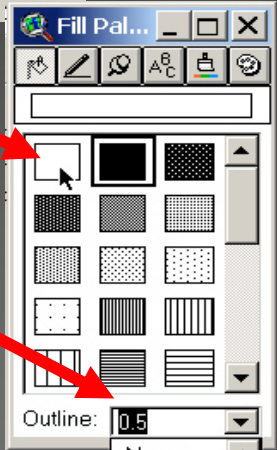

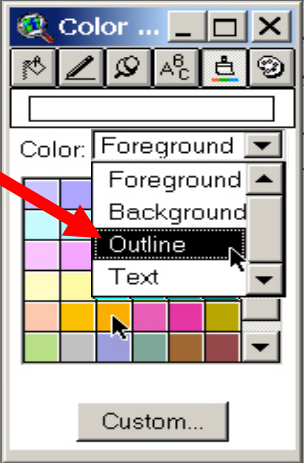
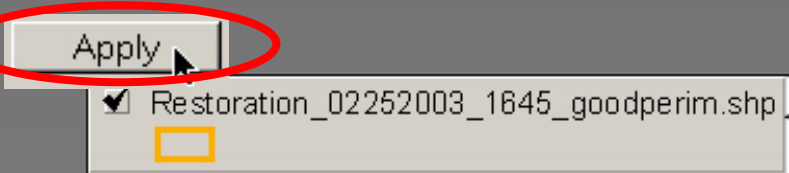
- Double click on Point theme
- Double click on symbol to Edit
- Change point size
- Click on Paint Brush



- Change color
- Apply

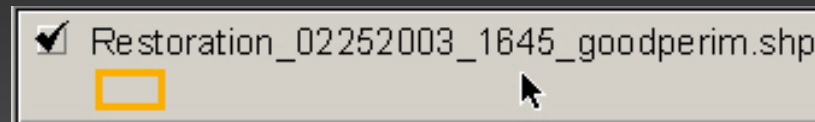


Edit Legend: Polygon Theme

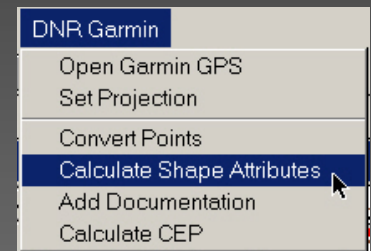
- Double click on theme in legend → 
- Double click on symbol to Edit → 
- Use the Fill Palette to change the fill to transparent and thicken outline → 
- Click on Paint Brush button → 
- Use the Color Palette to change Outline color → 
- Apply → 

DNR Garmin: Attribute Shapefiles

- Make polygon shapefile the active (raised) theme



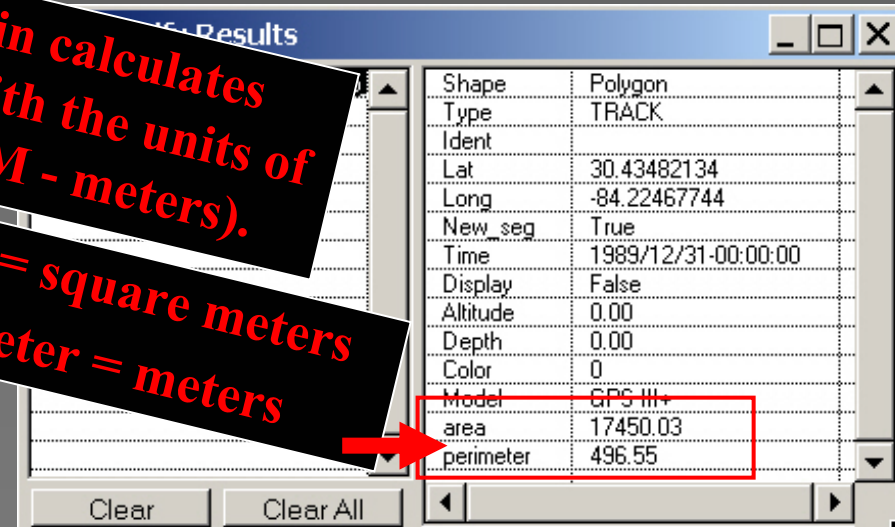
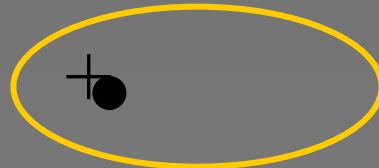
- DNR Garmin | Calculate Shape Attributes
- Use identify button to show attributes



DNR Garmin calculates attributes with the units of the GIS (UTM - meters).

**Area = square meters
Perimeter = meters**

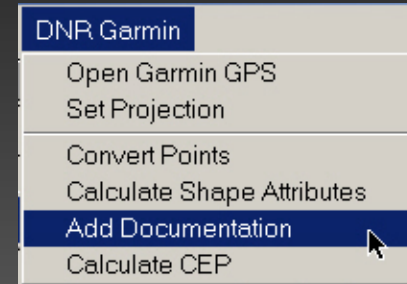
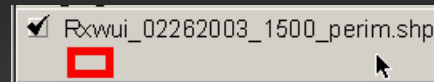
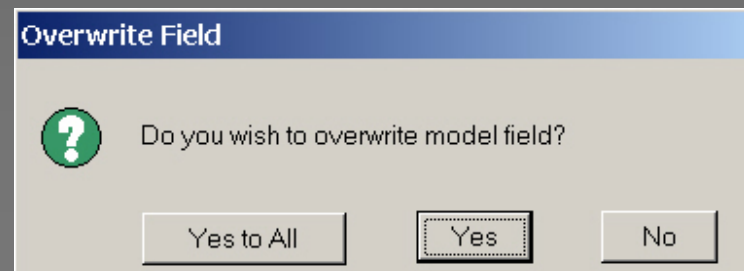
- Click inside polygon



Shape	Polygon
Type	TRACK
Ident	
Lat	30.43482134
Long	-84.22467744
New_seg	True
Time	1989/12/31-00:00:00
Display	False
Altitude	0.00
Depth	0.00
Color	0
Model	GPS III+
area	17450.03
perimeter	496.55

DNR Garmin: Shapefile Documentation

- Make Theme Active
- DNR Garmin | Add Documentation
 - Creator
 - Agency
 - Year
 - Day
 - Month
 - Hour
 - GPS Model
 - Overwrite Field Option

A screenshot of the 'Add Documentation' dialog box. It has a title bar with a magnifying glass icon and the text 'Add Documentation'. The dialog contains several input fields: 'Creator' with the text 'Kathie Hanser', 'Agency' with the text 'National Park Service', 'Year' with a dropdown menu showing '2003', 'Month' with a dropdown menu showing '2', 'Day' with a dropdown menu showing '26', 'Hour' with a dropdown menu showing '15', and 'GPS Model' with a dropdown menu showing 'GPS III+'. There are 'OK' and 'Cancel' buttons at the bottom right. A mouse cursor is pointing at the 'OK' button.

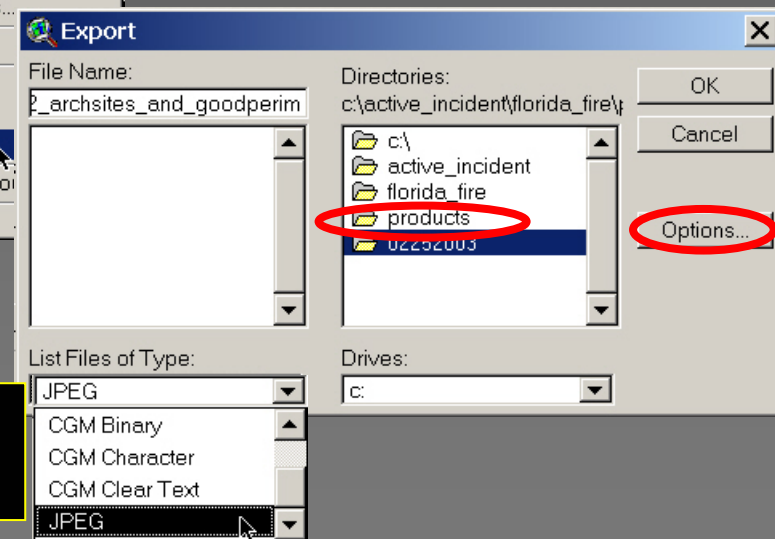
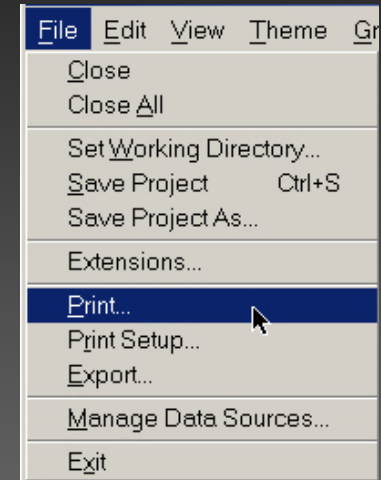
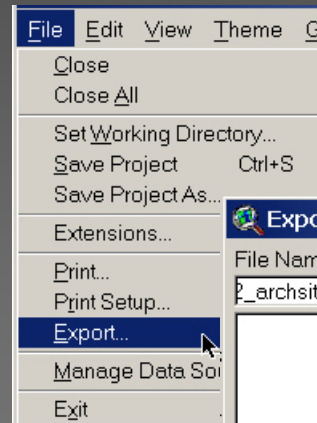
What if I Want a *Quick* Map?

- File | Print to print the View
 - Screen capture, nothing fancy
 - No legend, scale bar, etc.

- File | Export to save as a .jpg
 - Products folder by date
 - Change file type to .jpg
 - Name file
 - OK



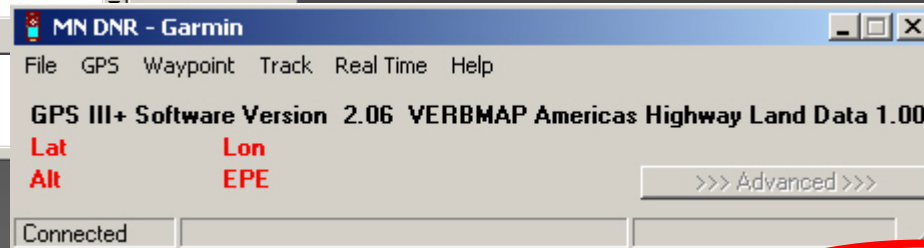
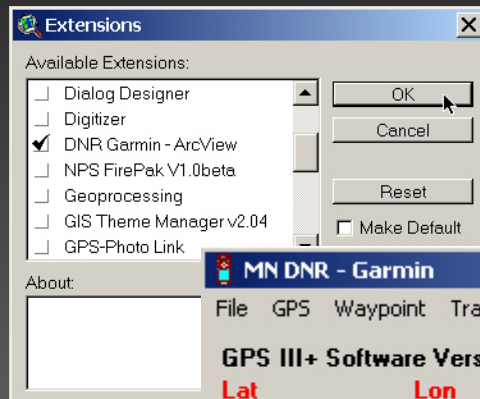
TIP: Click on **Options** to increase resolution and quality of .jpg



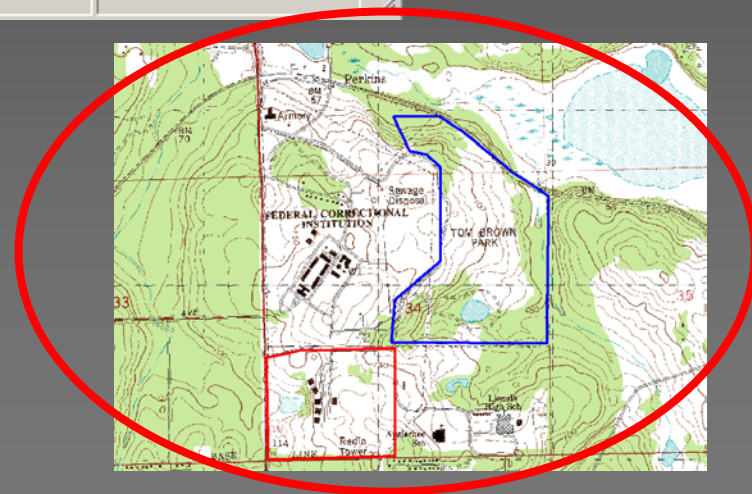
ArcView: AlaskaPak Extension



**Collect
Data**



DNR Garmin



ArcView

AlaskaPak Extension

AlaskaPak is a NPS - AKRO developed extension for use with ArcView 3.x.

- Provides a suite of general utilities for use in a variety of GIS projects.
- Utilities are particularly useful for natural resource and cultural resource needs.
- Free to download, and all code is available within the extension for public use or modification.

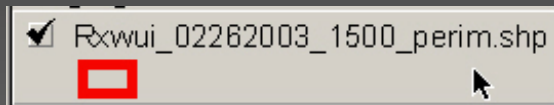
AlaskaPak Installation

- Installation
 - Navigate to \Software\AlaskaPak. Find on Training CD or internet*
 - Copy **aksopack.avx** to
C:\ESRI\AV_GIS30\ARCVIEW\EXT32
 - Copy **aksopack.hlp** to
C:\ESRI\AV_GIS30\ARCVIEW\HELP

*http://www.nps.gov/gis/applications/new_apps.html

AlaskaPak Extension: Quick Acres

- Turn on AlaskaPak
 - File | Extensions | AlaskaPak
- Polygon Theme Active

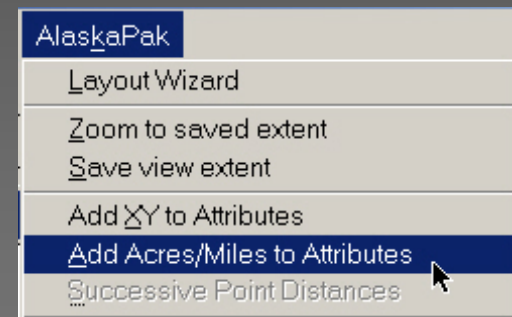
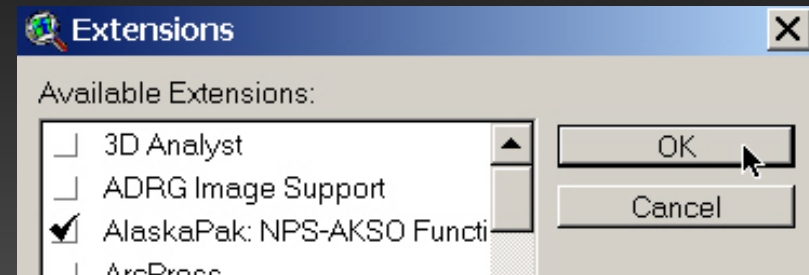


- Add Acres/Miles to Attributes

- Identify Button




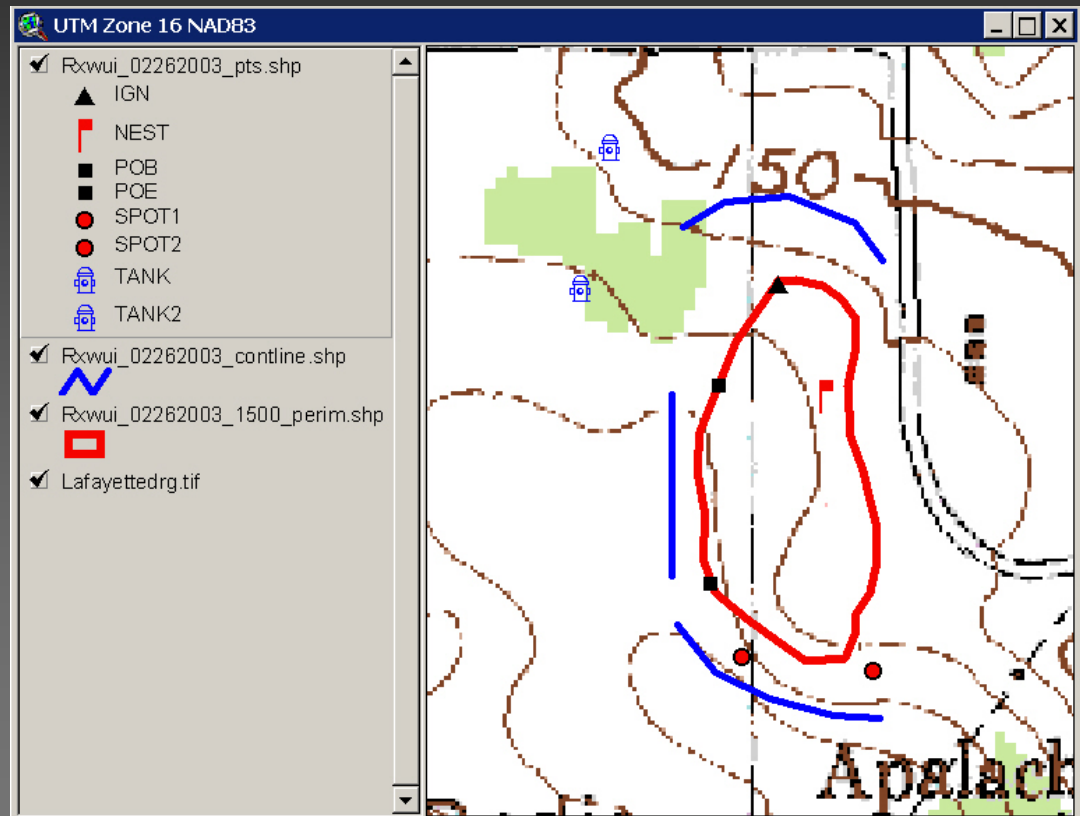
- How many acres and perimeter miles was the burn?



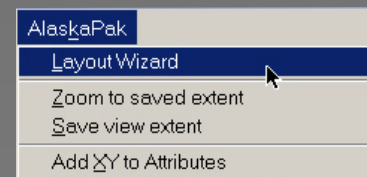
AlaskaPak Extension: Quick Map

- Choose View Extent

- Zoom in 
- Zoom out 
- Pan 



- AlaskaPak | Layout Wizard



AlaskaPak Extension: Quick Map

- Create a Customized Layout
 - Main Title
 - Subtitle
 - Park Unit
 - Team or Group
 - Template
 - Orientation
 - Size
 - Scalebar units

Create a customized layout

Main Title:

Subtitle:

Park unit:

Team or group:

Template: ☒ standar ☐ custom

Orientation: ☒ portrai ☐ landscap

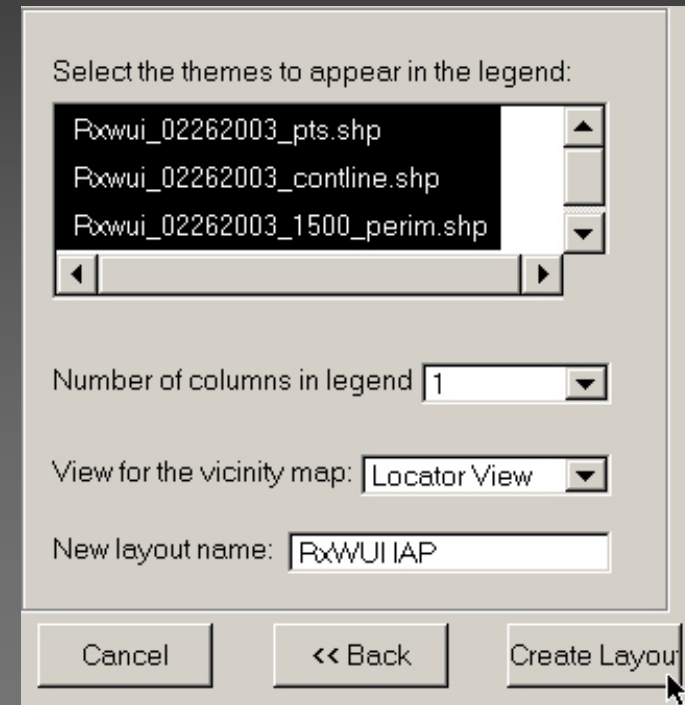
Size:

Scalebar units:

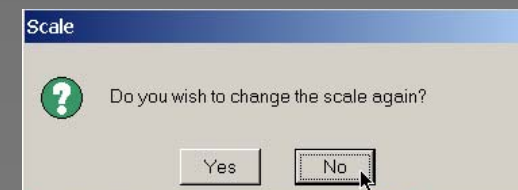
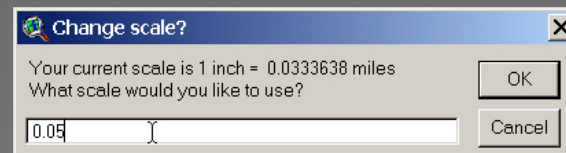
Preview: The preview shows a map of Alaska with a green shaded area. The map is titled "RxxWUI Prescribed Fire" and "Sprawlsurrounded NWR". The map is oriented vertically (portrait) and has a scale bar at the bottom. The map is titled "RxxWUI Prescribed Fire" and "Sprawlsurrounded NWR". The map is oriented vertically (portrait) and has a scale bar at the bottom.

AlaskaPak Extension: Quick Map

- Create a Customized Layout
 - Select Themes - use shift key for multiple selection
 - Number of columns in legend
 - View for the vicinity map
 - New layout name
 - Create Layout



- Change Scale?



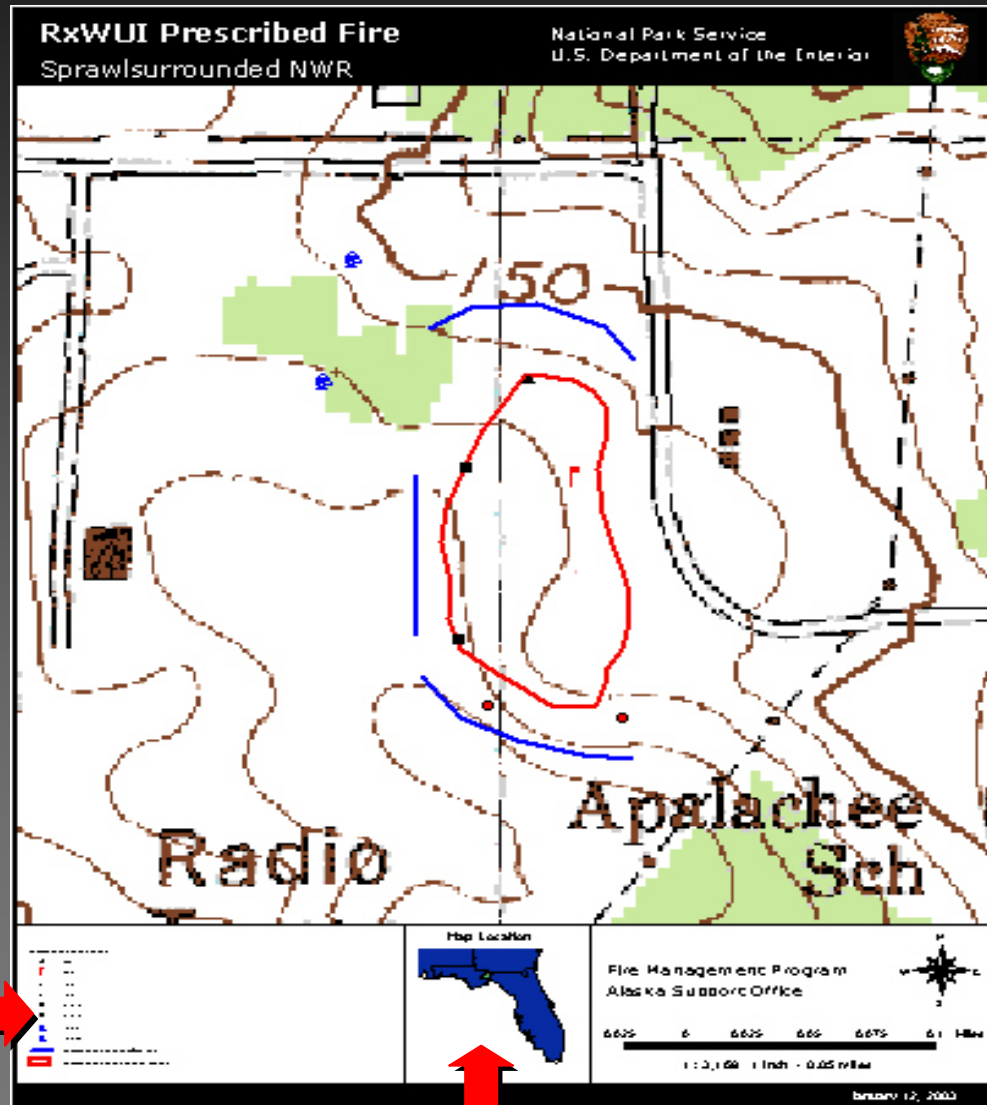
- allows for more logical ratio
- repeat until desired outcome

AlaskaPak Extension: Quick Map

- File | Print
- File | Export...*

*Save .jpgs in
products folder
by date!

Legend



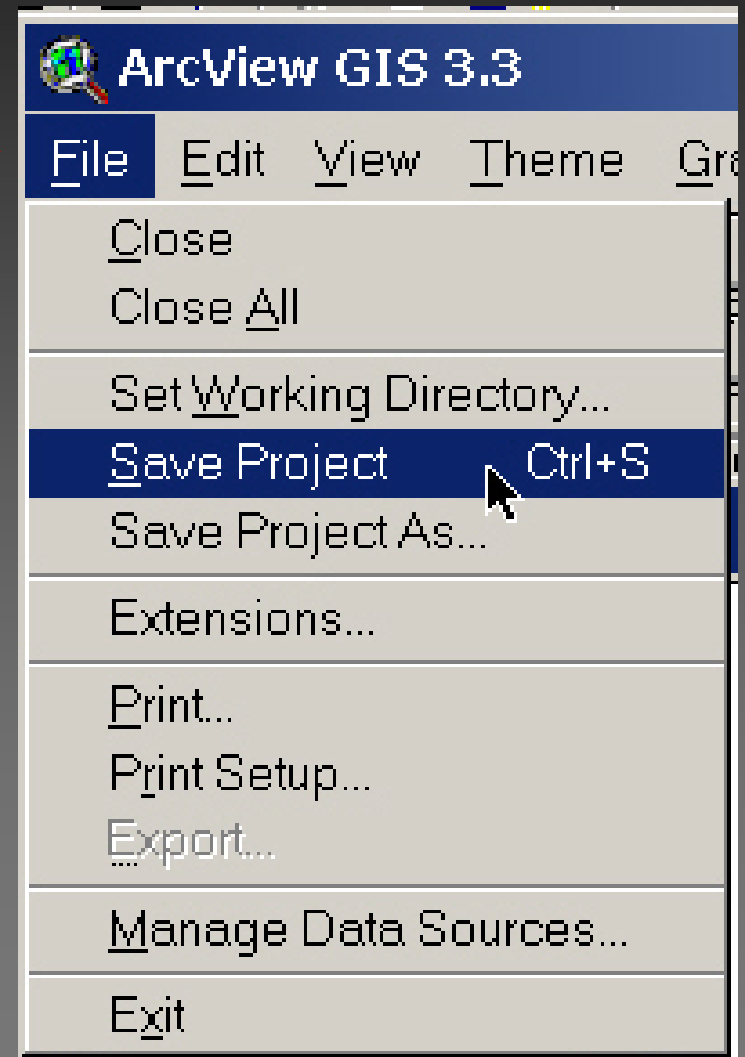
Locator Map

Creation
Date

Save ArcView Project

- File | Save Project
OR...

- Hit that SAVE button!



Summary

- Edit the View legend for point and polygon themes
- Calculate attributes for shapefile with DNR Garmin
- Document shapefiles with DNR Garmin
- Print or save a “map”
- Install AlaskaPak Extension
- Turn on AlaskaPak in ArcView
- Calculate Polygon Acreage and Perimeter Miles
- Create a Layout with the AlaskaPak Layout Wizard

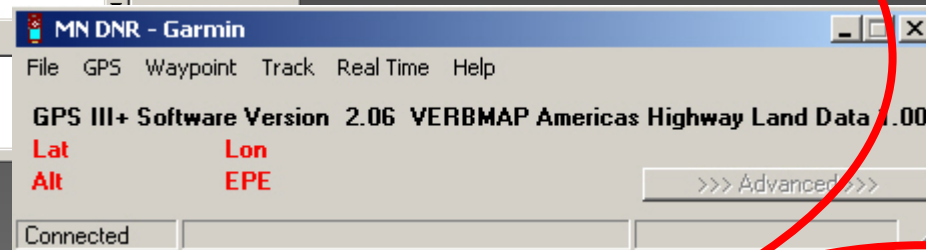
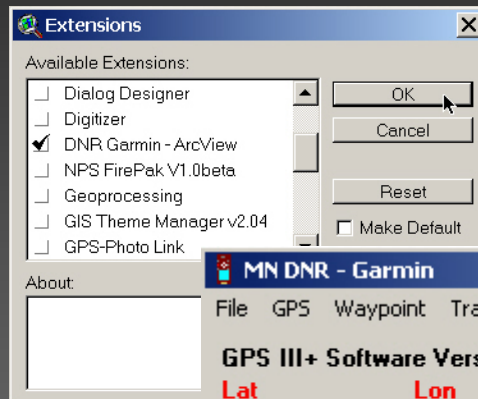
END OF POST-FIELD FOR RESTORATION FIRE

- Close ArcView Project

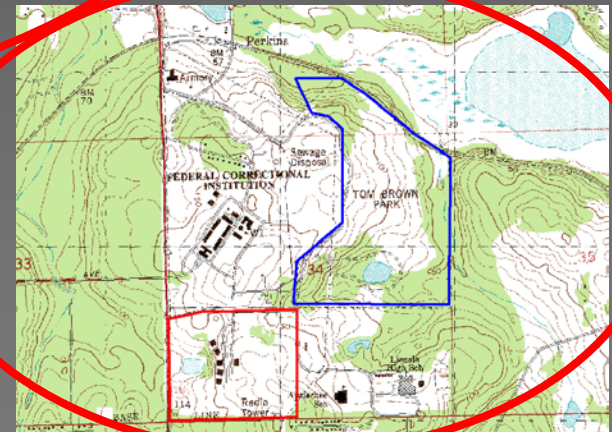
DNR Garmin & ArcView: Downloading Waypoints & Tracks, Managing Tracks and Editing Legend



**Collect
Data**



DNR Garmin



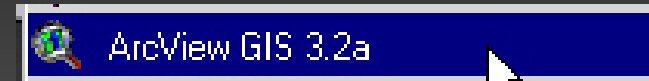
ArcView

Objectives

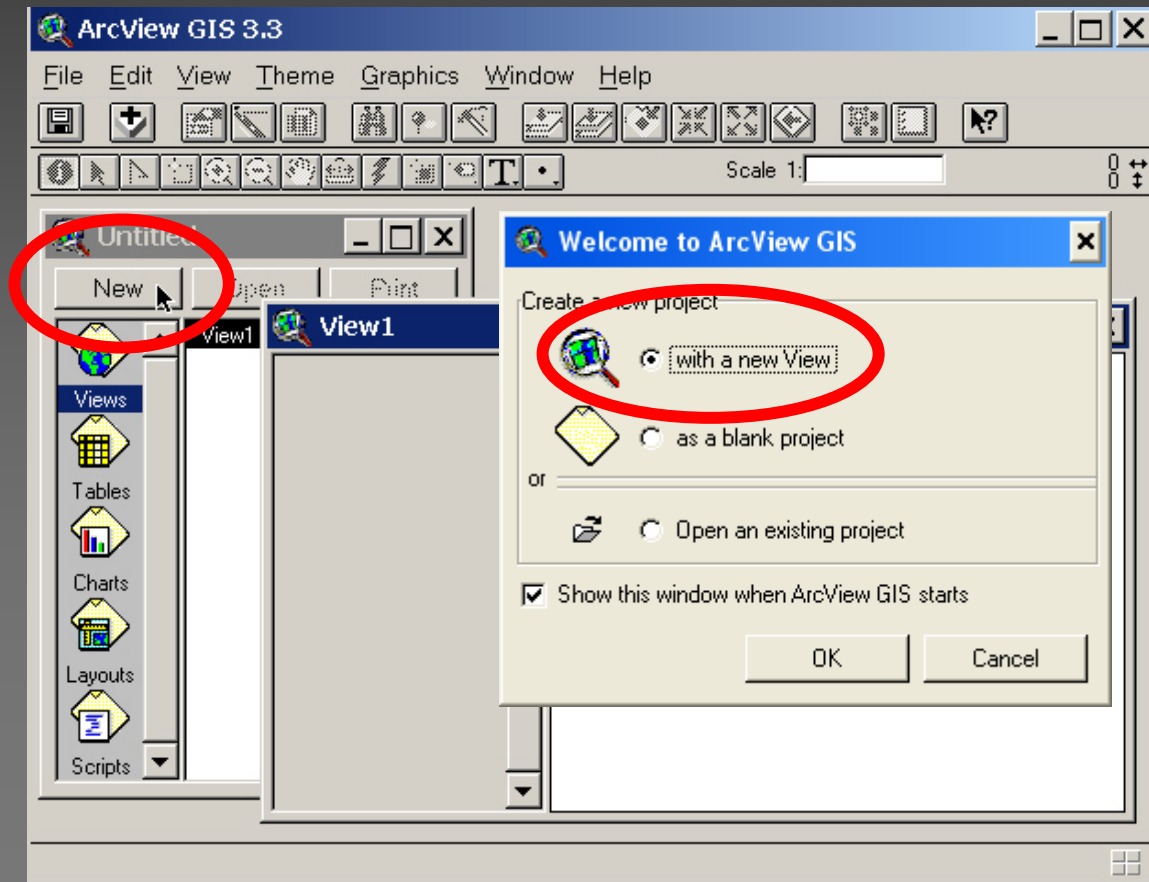
- Download Waypoints and save as Point Shapefile
- Track Management for multiple track segments
 - Download track
 - Save as Point Shapefile
 - Save as again as Line Shapefile
 - Select points that make up “polygon”
 - convert points to polygon
 - Delete unwanted lines
- Edited legend symbology, labels and theme names

New ArcView Project

- Start ArcView
 - Start Button | Programs | ESRI | ArcView3 | ArcView



- Open an ArcView
 - New View
- Or...
 - “with a new View”
when dialog box inquires



New ArcView Project

- Set View | Properties
 - Map Units: meters
 - Distance Units: feet

View Properties

Name: View1

Creation Date: Wednesday, May 07, 2003 02:42:59 PM

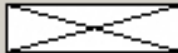
Creator:

Map Units: meters

Distance Units: feet

Projection...

Area Of Interest...

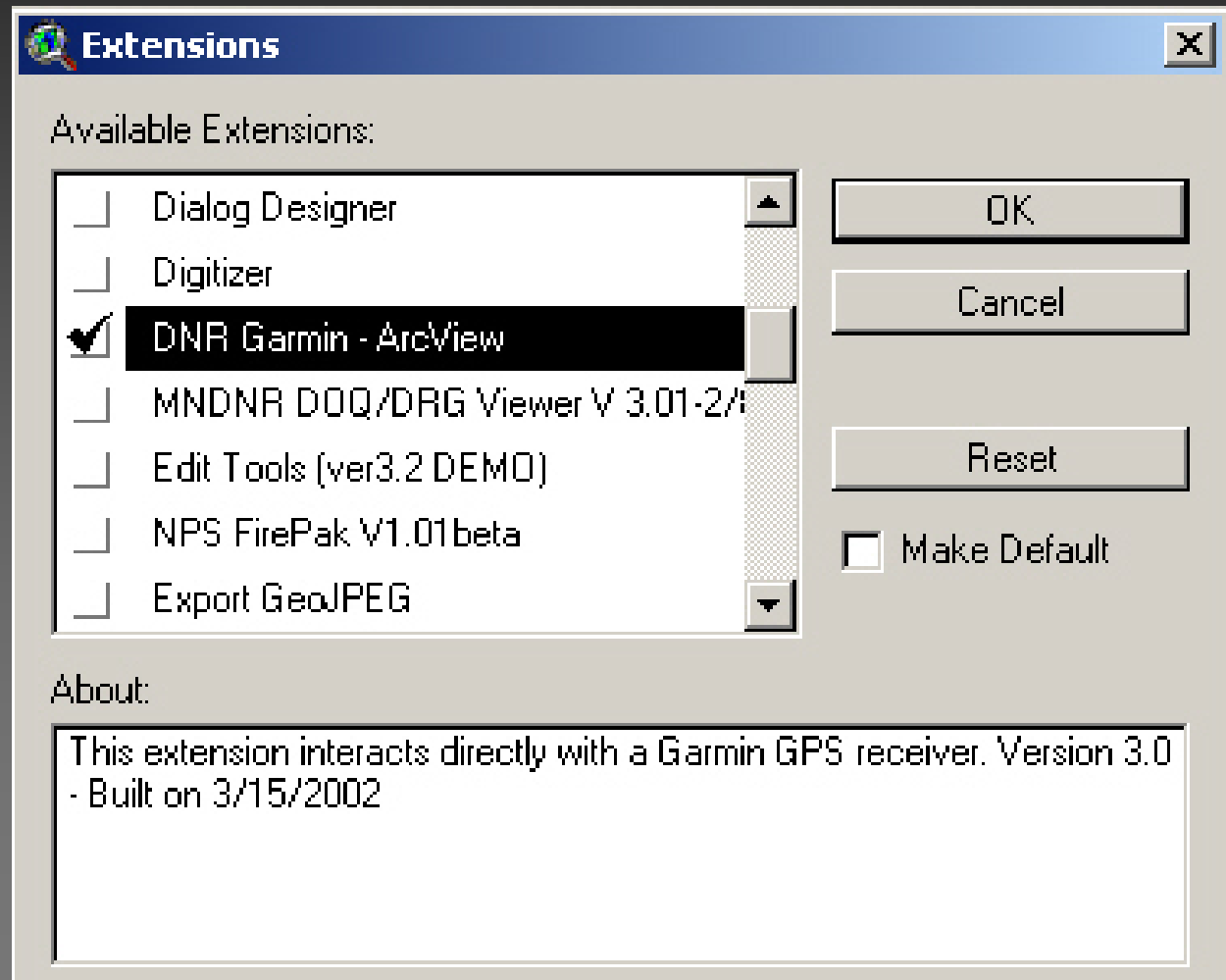
Background Color:  Select Color...

Comments:

OK Cancel

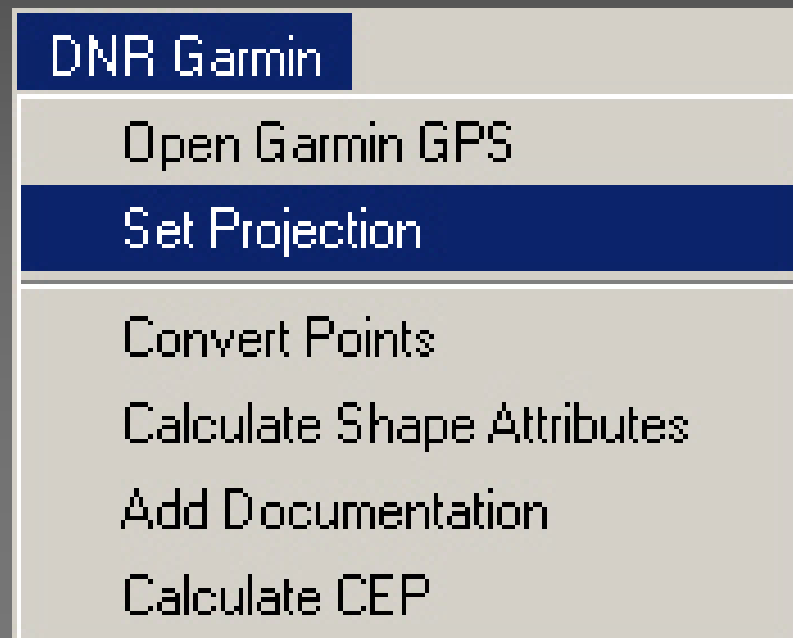
New ArcView Project

- Load Extensions
 - AlaskaPak
 - DNR Garmin
 - MrSID



New ArcView Project

- Set Projection
 - Since some of you may already have loaded DNR Garmin, we need to ensure the Projection is set
 - Select DNR Garmin | Set Projection



Download Waypoints into ArcView

- Select Waypoint | Download
- Click <<<Advanced<<< button to see entire table



The screenshot shows the ArcView 3.3a interface. On the left is the Table of Contents with layers like Florida_dof.shp and Lafayette.drg.tif. The main window is titled "MN DNR - Garmin" and displays GPS data. A table of waypoints is shown, and a small dialog box indicates "Received 4 records."

GPS III+ Software Version 2.05 VERBMAP Americas Highway Land Data 1.00
Lat 45.037226 Lon -92.835459
Alt 304.2 meters EPE 30

<<< Advanced >>>

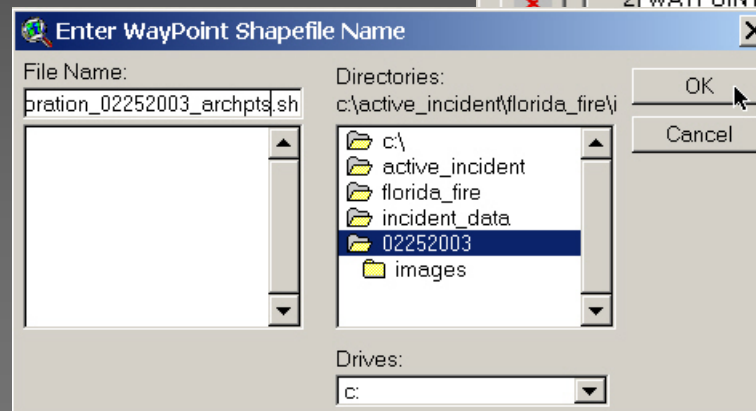
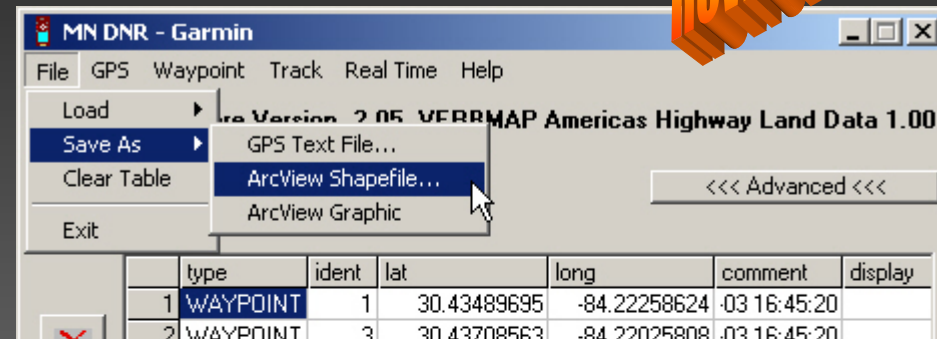
	type	ident	lat	long	comment	display
1	WAYPOINT	1	30.43489695	-84.22258624	-03 16:45:20	
2	WAYPOINT	2	30.43489695	-84.21938905	-03 16:45:20	
3	WAYPOINT	3	30.43708563	-84.22025808	-03 16:45:20	
4	WAYPOINT	4	30.43689251	-84.22135779	-03 16:45:20	

DNRGarmin
Received 4 records.
OK

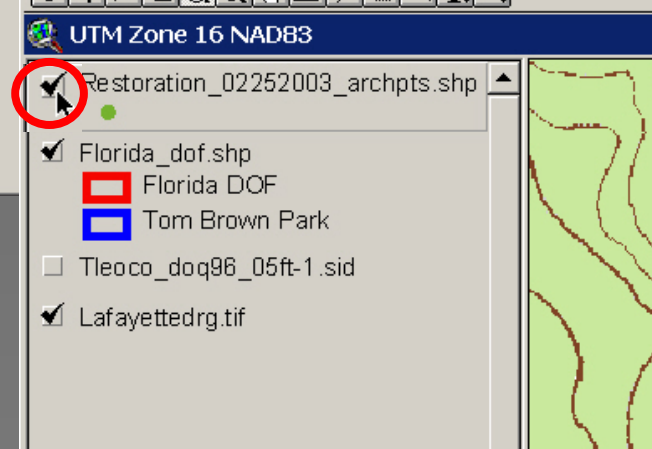
Connected Received 4 of 4 waypoints 0 of 4 Selected

Save as ArcView Shapefile

- Select File | Save As | ArcView Shapefile
- Output **Point**
- Rename and Save Shapefile

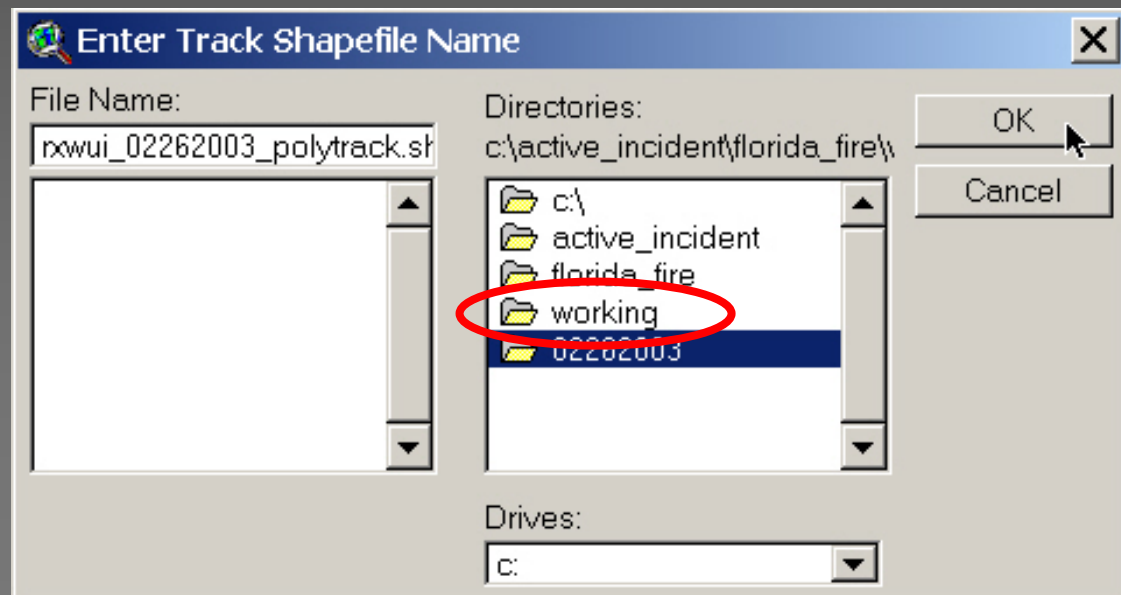
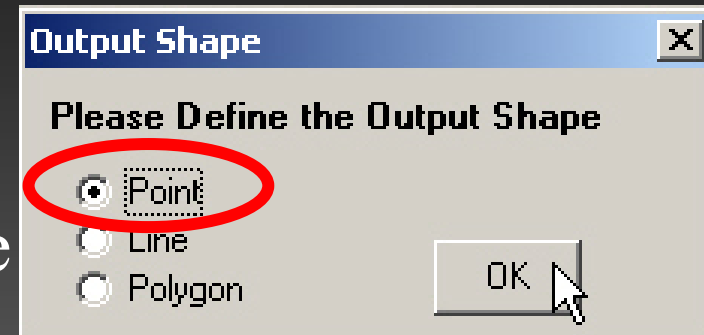


- Shapefile will be added to View
- Turn on in View



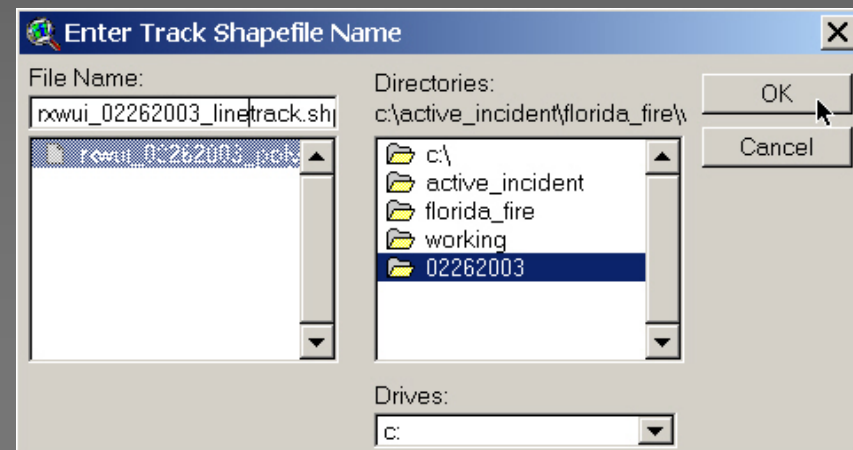
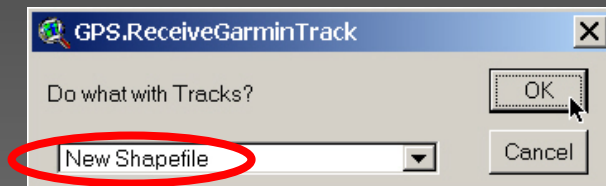
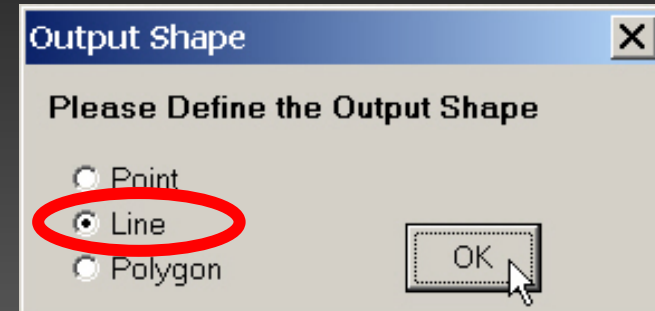
Track Management

- DNR Garmin Extension
 - Track | Download
 - File | Save As | ArcView Shapefile
 - Output Point
 - Save in **W**orking Folder



Track Management

- DNR Garmin Extension
 - Track | Download
 - File | Save As | ArcView Shapefile
 - Output Line
 - New Shapefile
 - Working Folder OR...
 - **INCIDENTDATA** folder and name as line feature (e.g., cigtoss_05162003_hndln.shp)



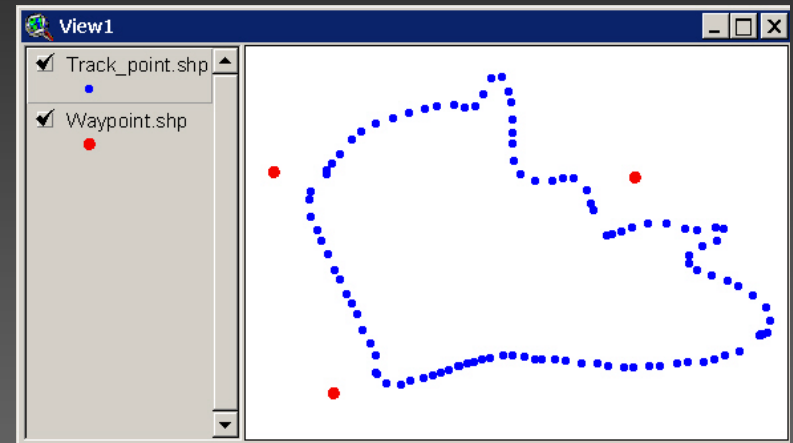
Track Management

- Exit the DNR Garmin Extension
 - File | Exit



Edit Point Shapefile

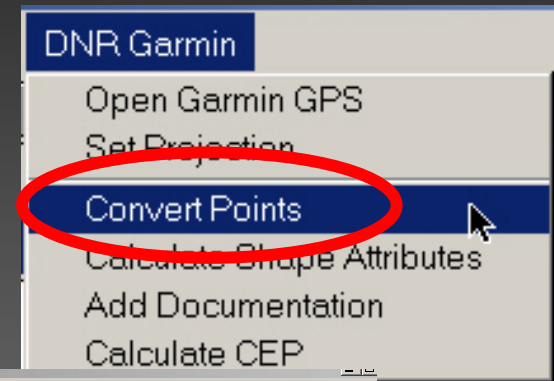
- Turn on Track **P**oint Shapefile (turn off others)
 - Make Point Theme Active (raised)
 - Use **S**elect tool and select points that make up the “polygon”



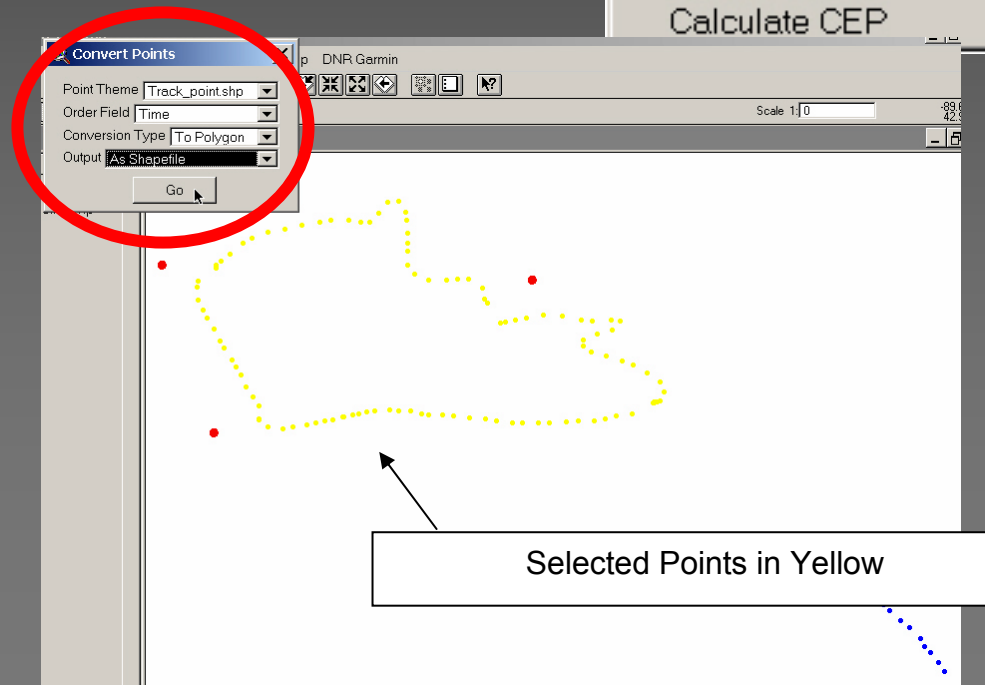
Edit Point Shapefile

- In the DNR Garmin drop down menu choose:

DNR Garmin | Convert Points

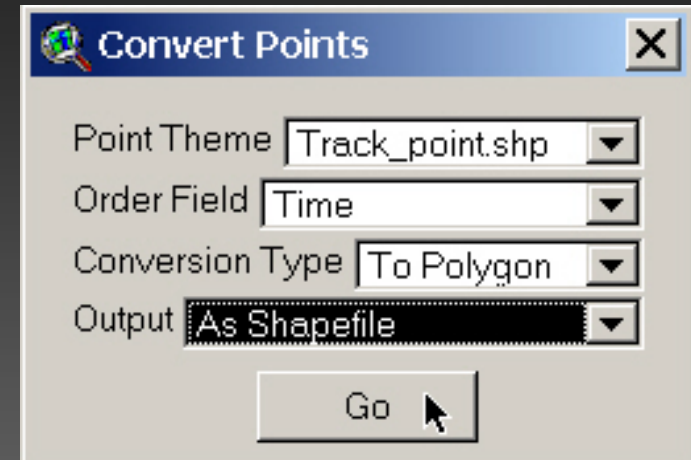


- Convert Points window pops open

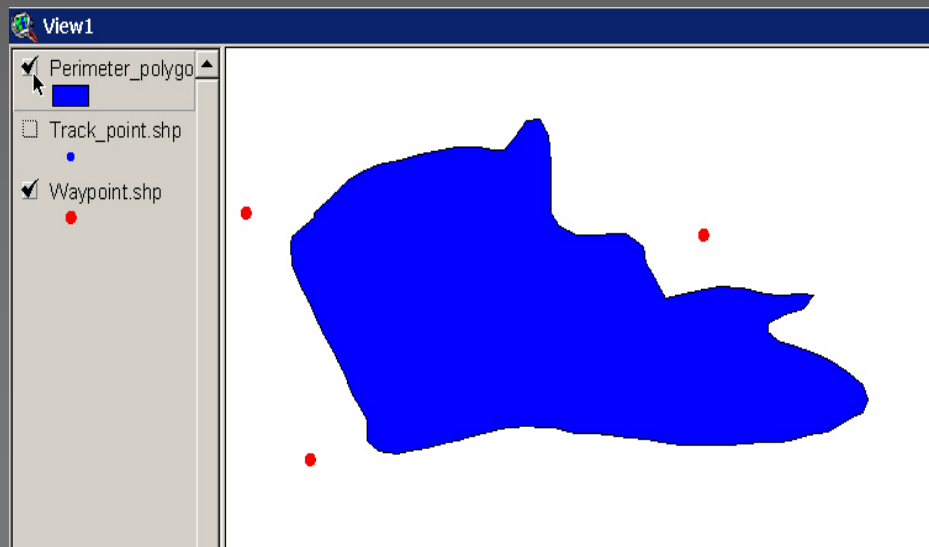


Edit Point Shapefile

- Order Field | **Time**
- Conversion Type | **To Polygon**
- Output | **As Shapefile**



Result: Polygon created from selected points

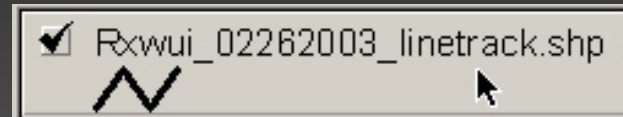


TIP -
AlaskaPak
also has this
menu option!

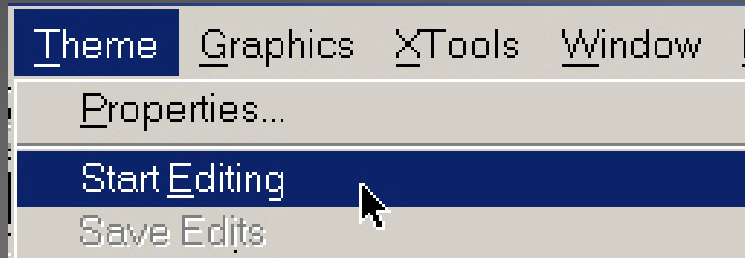
Edit Line Shapefile

- Turn on Track **Line** Shapefile (turn off others)

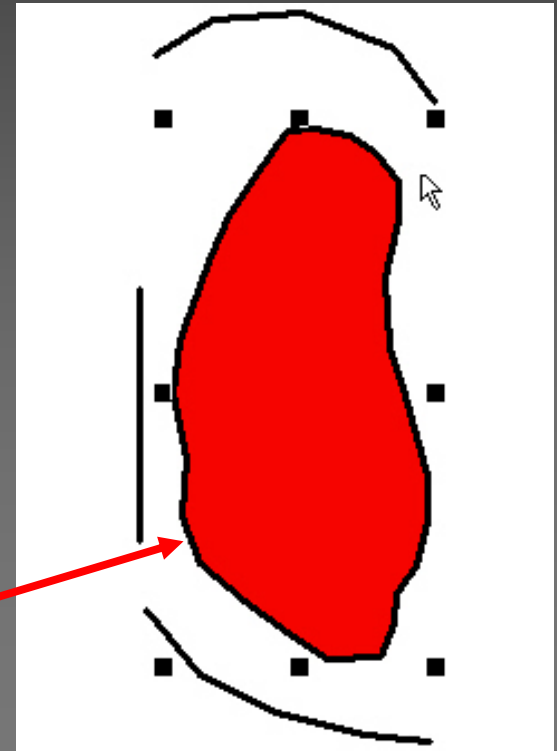
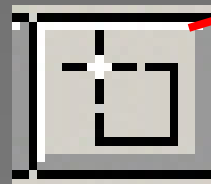
- Line Theme Active



- Theme | Start Editing

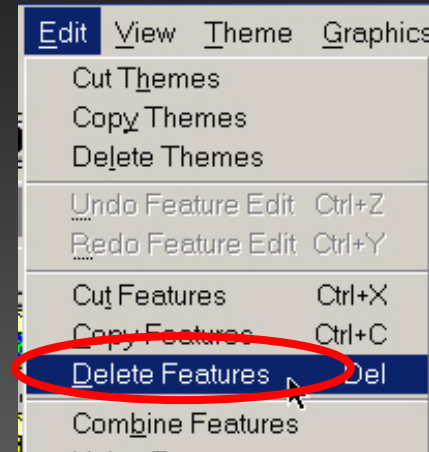


- Select unwanted lines
(i.e. those that make up
the polygon features)

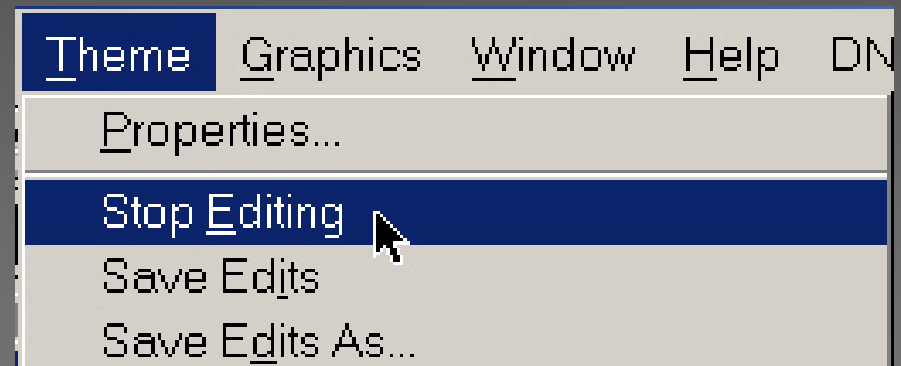


Edit Line Shapefile

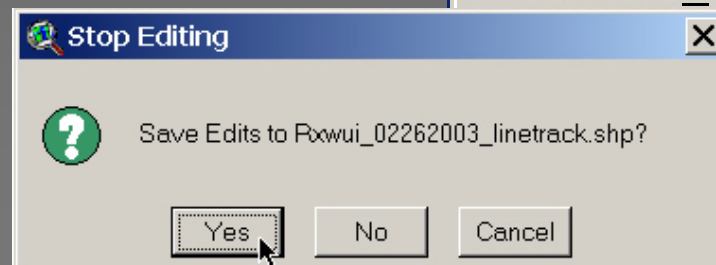
- Edit | Delete Features



- Theme | Stop Eediting

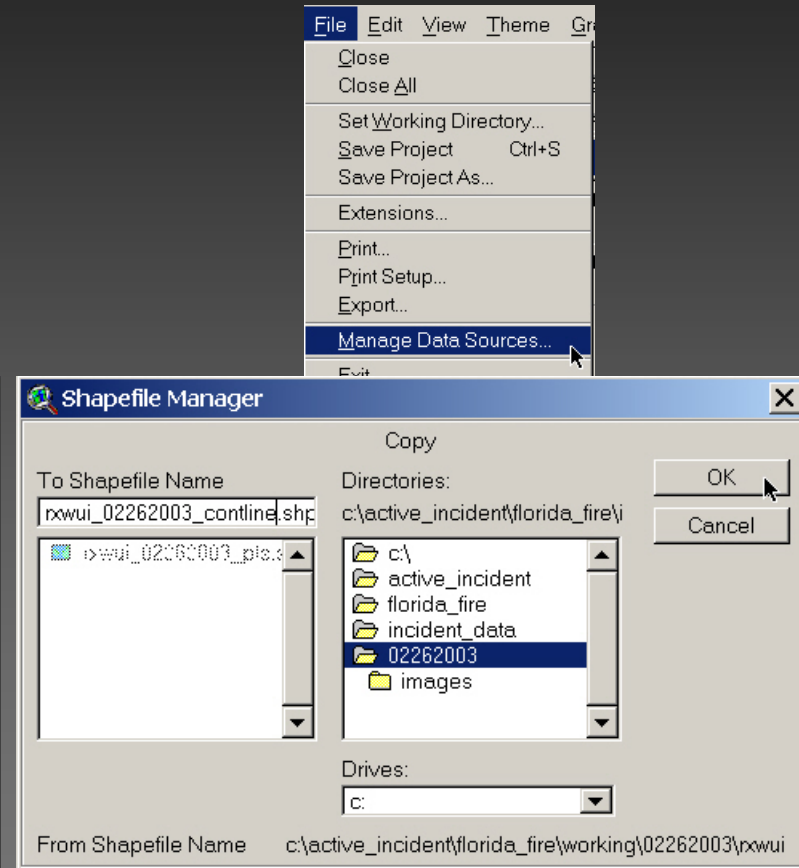
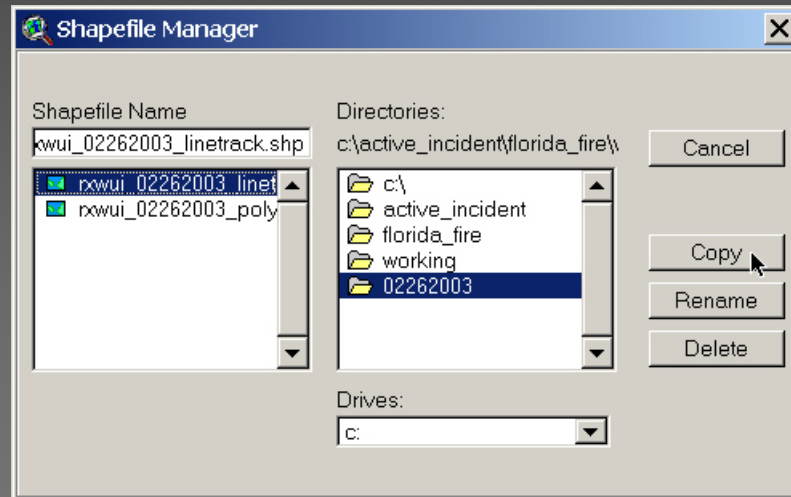


- Yes, Save Edits



FYI - Copying Shapefiles

- File | Manage Data Source
- Select Shapefile, Copy
- Browse to new folder
- OK



- Repeat to copy additional files
- Close Shapefile Manager



Deleting a Theme in the View

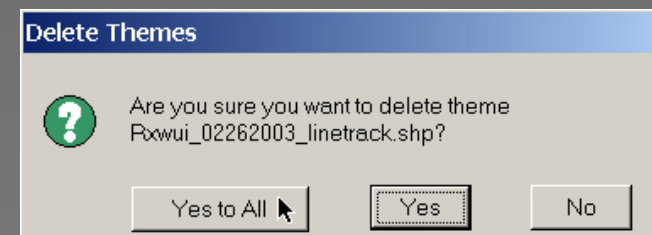
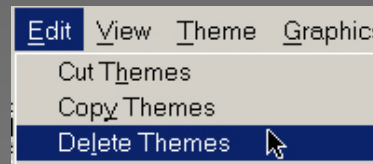
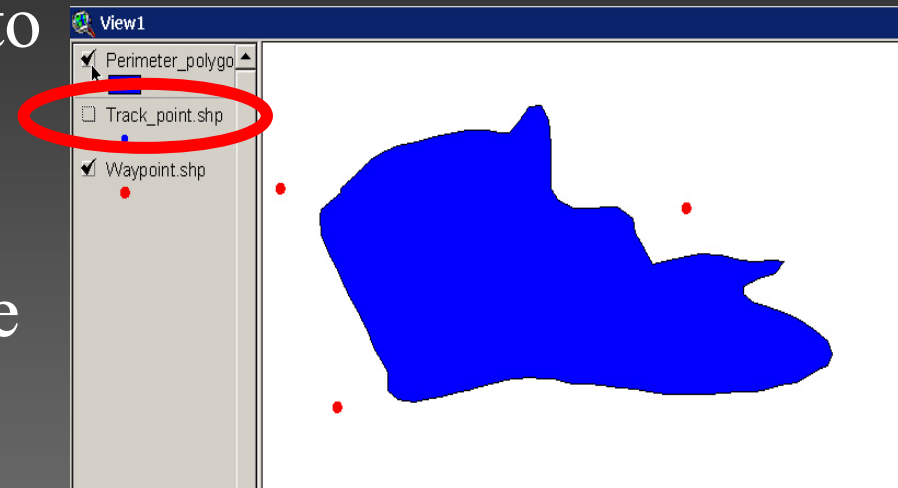
- Delete **Track Point** Theme from View

- Select theme (make active) to delete

- Hold shift key to select more than one theme (for future reference)


- Edit | Delete Themes

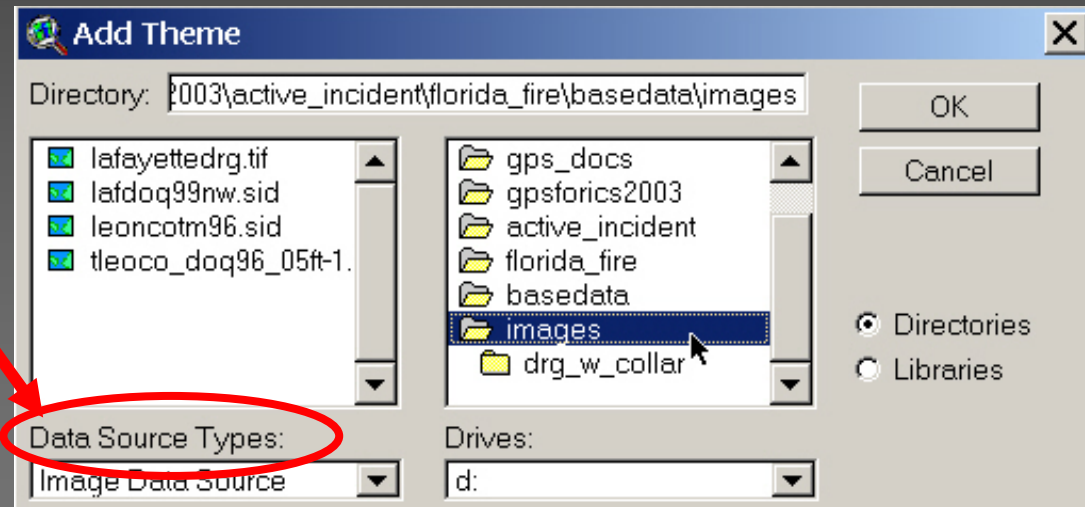
- Yes or Yes to All





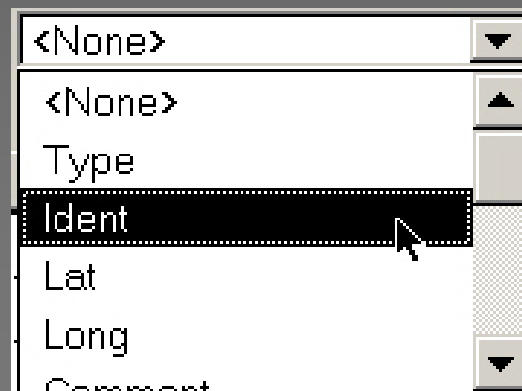
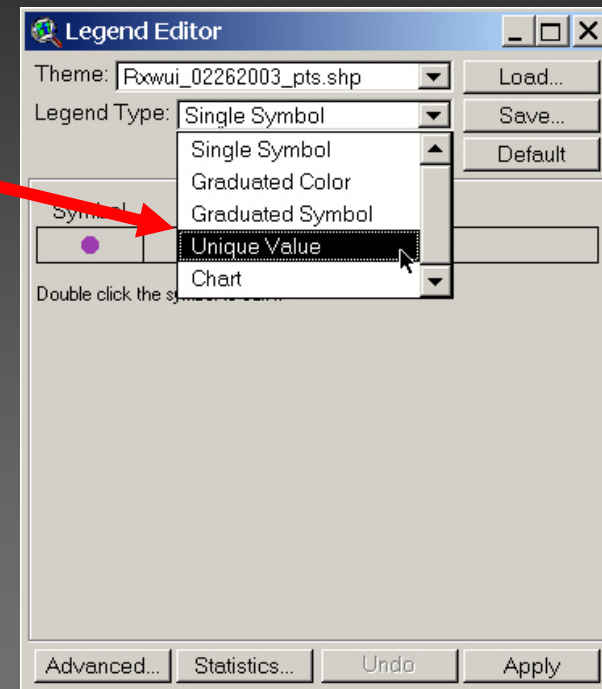
Add Themes to the View

- Add Theme Button  or View | Add Theme
- Change Data Source Type to Feature or Image Data Source
- Select more than one file by holding the shift key down







Edit Theme Legend

- Double click on **Point** theme
- Legend Type: **Unique Value**
- Values Field:
 - select a field with a **unique** attribute
 - e.g., **ident**

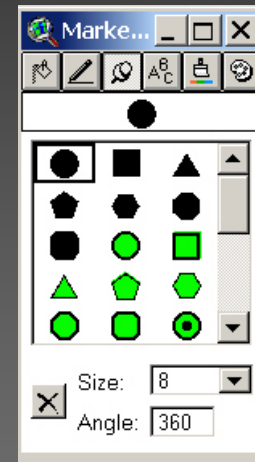


Edit Theme Legend

- Edit size, symbol, and color for each unique point
 - double-click on symbol to open symbol window
 - change symbols


Symbol	Value	Label
	IGN	IGN
	NEST	NEST
	POB	POB
	POE	POE





Review!



- double-click on cell in label field to change label

- Click Apply !
- Save Project!

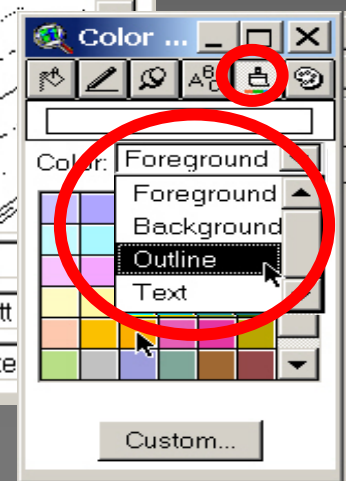
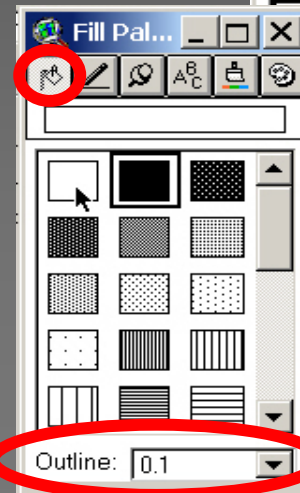
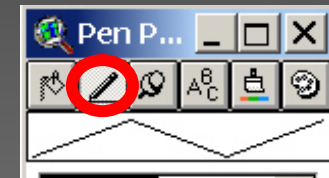
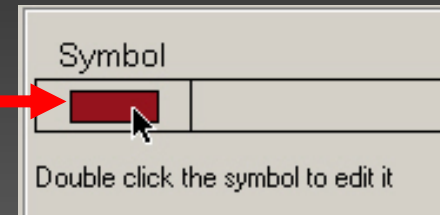


Symbol	Value	Label
	062420	HELIBASE
	062485	062485
	160090	160090
	300050	300050

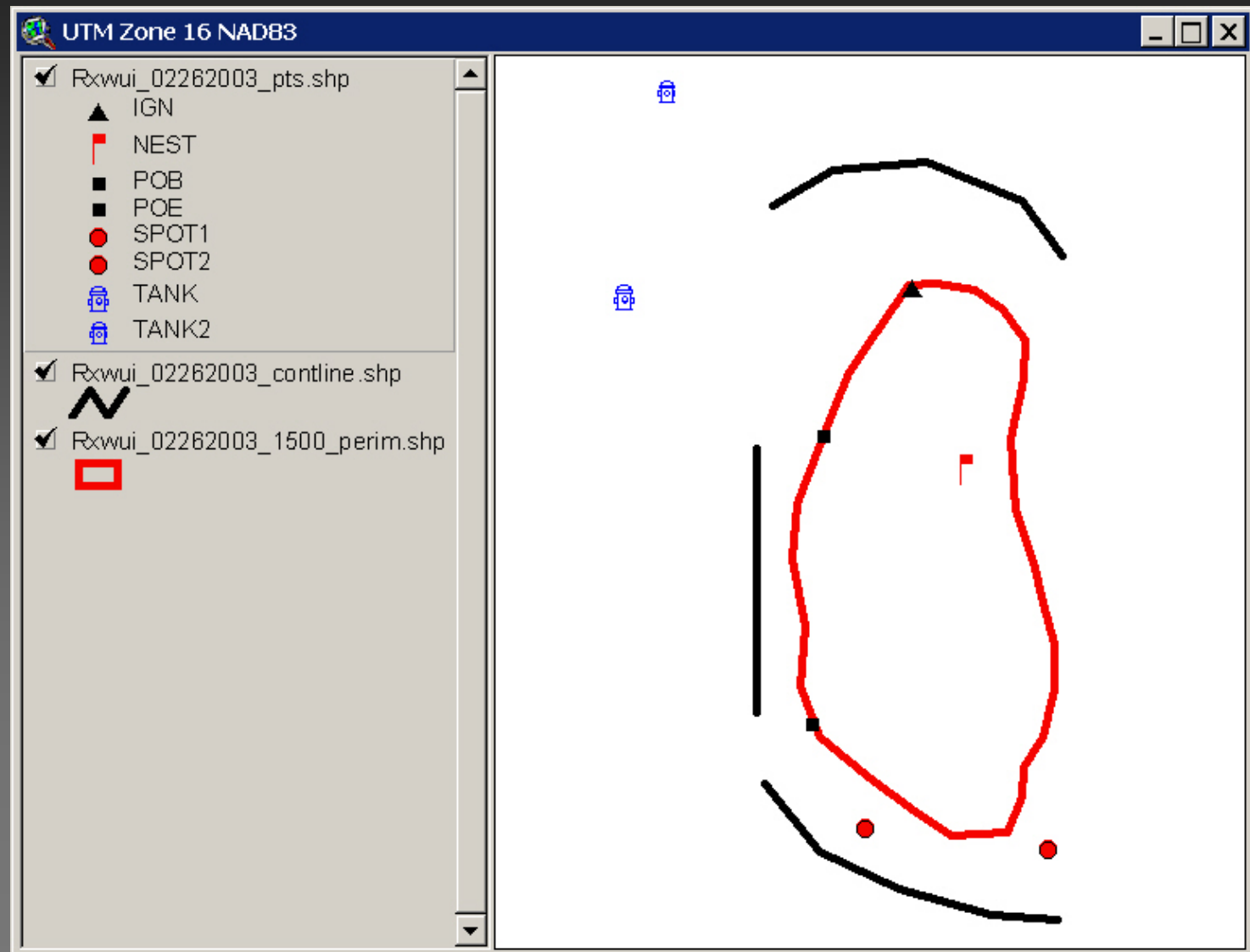


Edit Theme Legend

- Edit legend for line and polygon shapefiles
- Double click on theme in legend →
- Double click on symbol to Edit →
- Use the fill palette, color palette and pen palette to change style, fill, line/outline weight, and give color to foreground, background, and outline
- Apply →



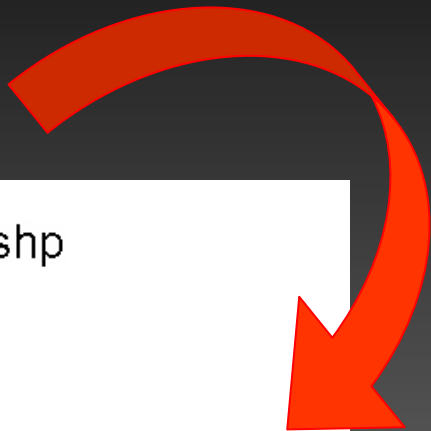
Example of View with Edited Legend



Advanced Legend Operations

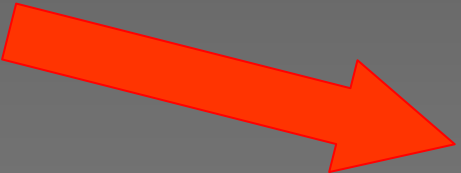
- The map legend will look like this...

- symbols look good
- names are cryptic!



Cigtoss_05162003_points.shp
● HELISPOT
▲ HELIBASE
🏠 DIP SITE
⚡ Cigtoss_05162003_hndln.shp
▨ Cigtoss_05162003_1300_perim.shp

- You would like your map legend to look like this!



Operations Points
● HELISPOT
▲ HELIBASE
🏠 DIP SITE
⚡ Handline
▨ Fire Perimeter 22 Acres - 5/16/03 1300

Advanced Legend Operations

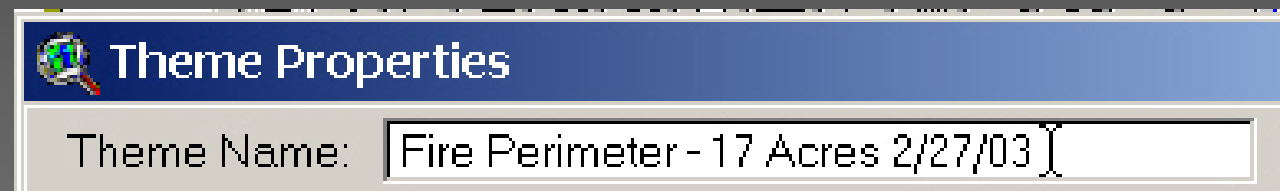
- Make the theme active



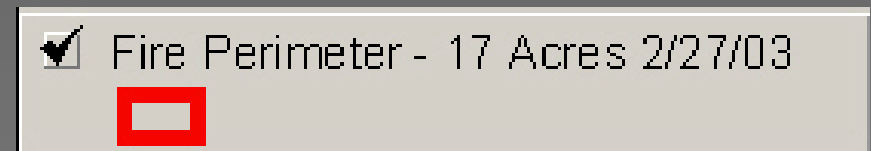
- Theme | Properties



- Change Theme Name



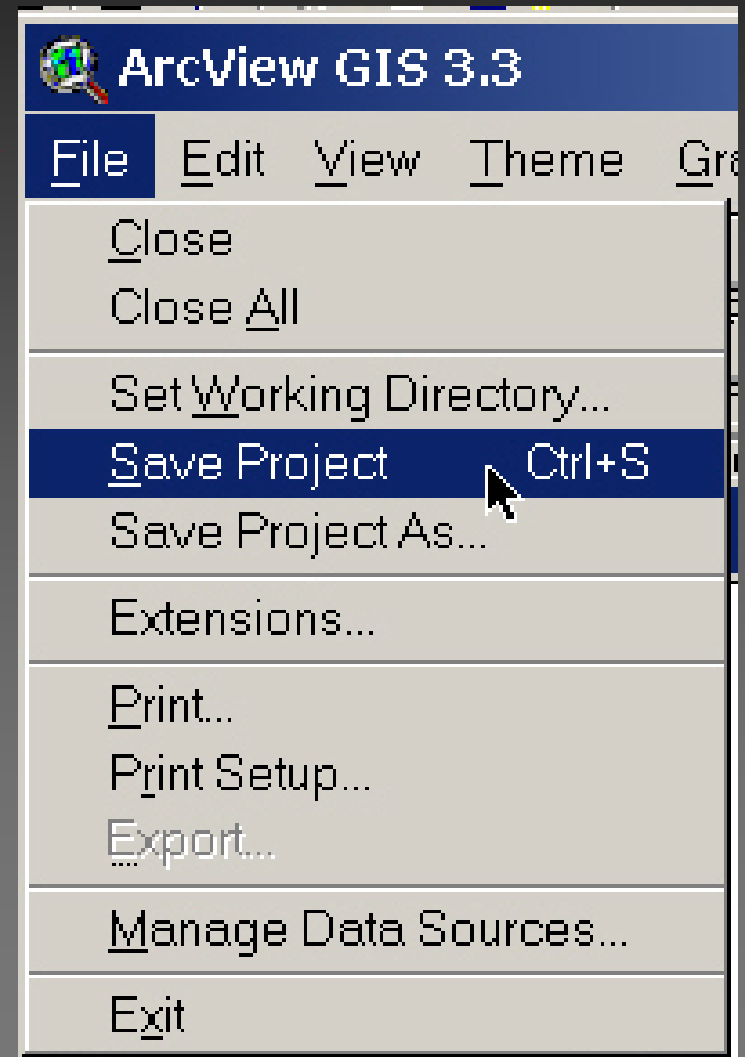
- OK
- Repeat for all other themes



Save ArcView Project

- File | Save Project
OR...

- Hit that SAVE button!



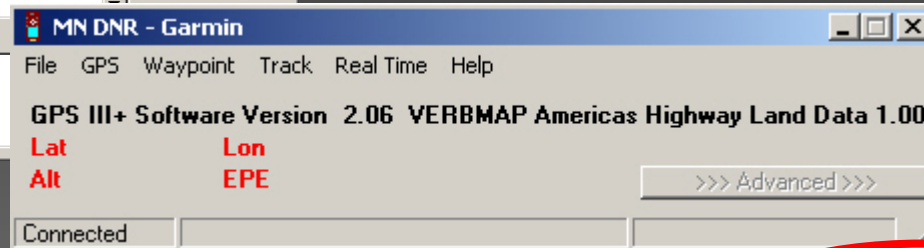
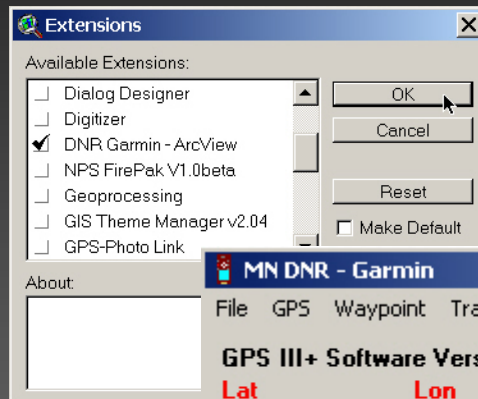
Summary

- Track Management
 - Downloaded track with polygon and line features
 - Saved as Polygon Shapefile
 - Saved as Line Shapefile
 - Deleted unwanted polygons
 - Deleted unwanted lines
 - Copied final shapefiles to incident data folder
- Deleted/Added themes to View
- Edited legend symbology, labels and theme names

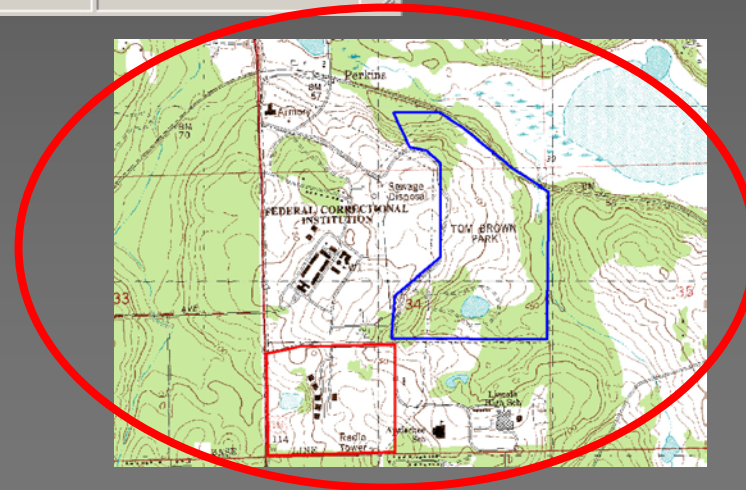
ArcView: FirePak Extension & Advanced Legend Edits, Continued



**Collect
Data**



DNR Garmin



ArcView

Objectives

- Install and turn on FirePak Extension
- Attribute Fire Perimeter Polygon
- Perform Additional Advanced Legend Operations
 - Add new palette to the legend editor
 - Use forestry.avp to change symbology
 - Change theme name in legend
- Create a Layout with the AlaskaPak Layout Wizard or on your own

FirePak Extension

NPS Firepak 1.0 provides a set of tools useful for a variety of fire management applications.

- Allows users to convert a set of points to a polygon
- Calculate acreage and perimeter miles
- Add a set of key attributes to daily fire perimeter shapefiles and coverages
- The attributes added to fire perimeter polygons using the Fire Perimeter Attributes function conform to the proposed interagency data standard for daily fire perimeters

FirePak Installation


- Installation
 - Navigate to \Software\FirePak. Find on Training CD or internet*
 - Copy firepak.avx to
C:\ESRI\AV_GIS30\ARCVIEW\EXT32
 - Optional: Open and read readme.txt for a quick overview of FirePak

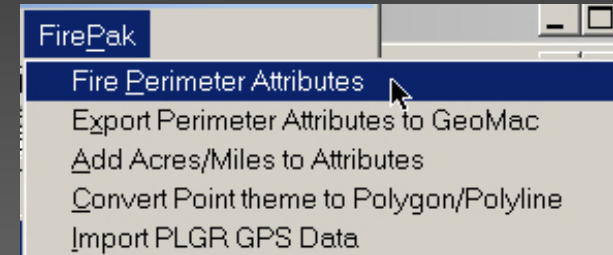
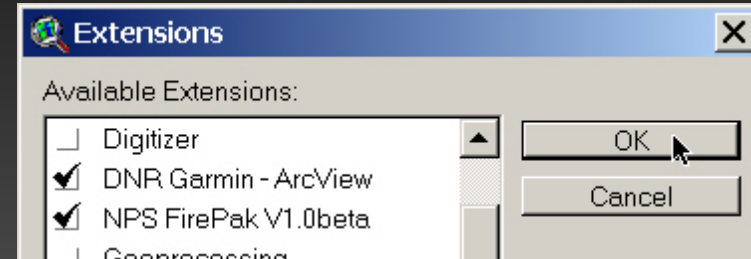
* http://www.nps.gov/gis/applications/new_apps.html



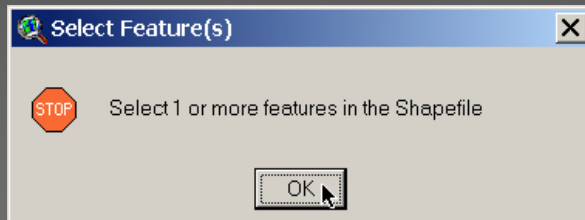
TIP ArcGIS 8.x
version also available
on CD and on the web

FirePak Extension: Attribution

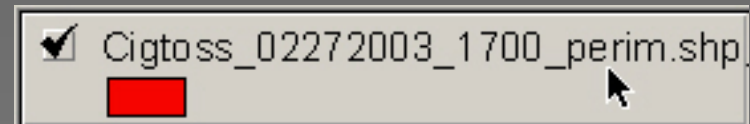
- Turn on FirePak
 - File | Extensions | NPS FirePak
- FirePak | Fire Perimeter Attributes
- or... Fire Button 



- STOP
- Make sure theme is active
- Select polygon 
- Try again 



Polygon must be selected



FirePak Extension: Attribution

- Unit ID
- Fire Name
- Fire Number
- Collection Date
- Collection Time
- Collection Method
- Source
- Differential Correction
- Travel Method



TIP: Float cursor
over field

Fire Perimeter Attributes

Unit ID: FL-SNF-03004

Fire Name: Cigarette Toss

Fire Number: 03004

Collection Date (YYYYMMDD): 20030227

Collection Time (Military, HHMM): 1700

Collection Method:

☒ GPS ☐ Digitized

Source: Garmin III Plus

Differential Correction: None

Travel Method: Foot

<<Previous Next>> Help Cancel Finish

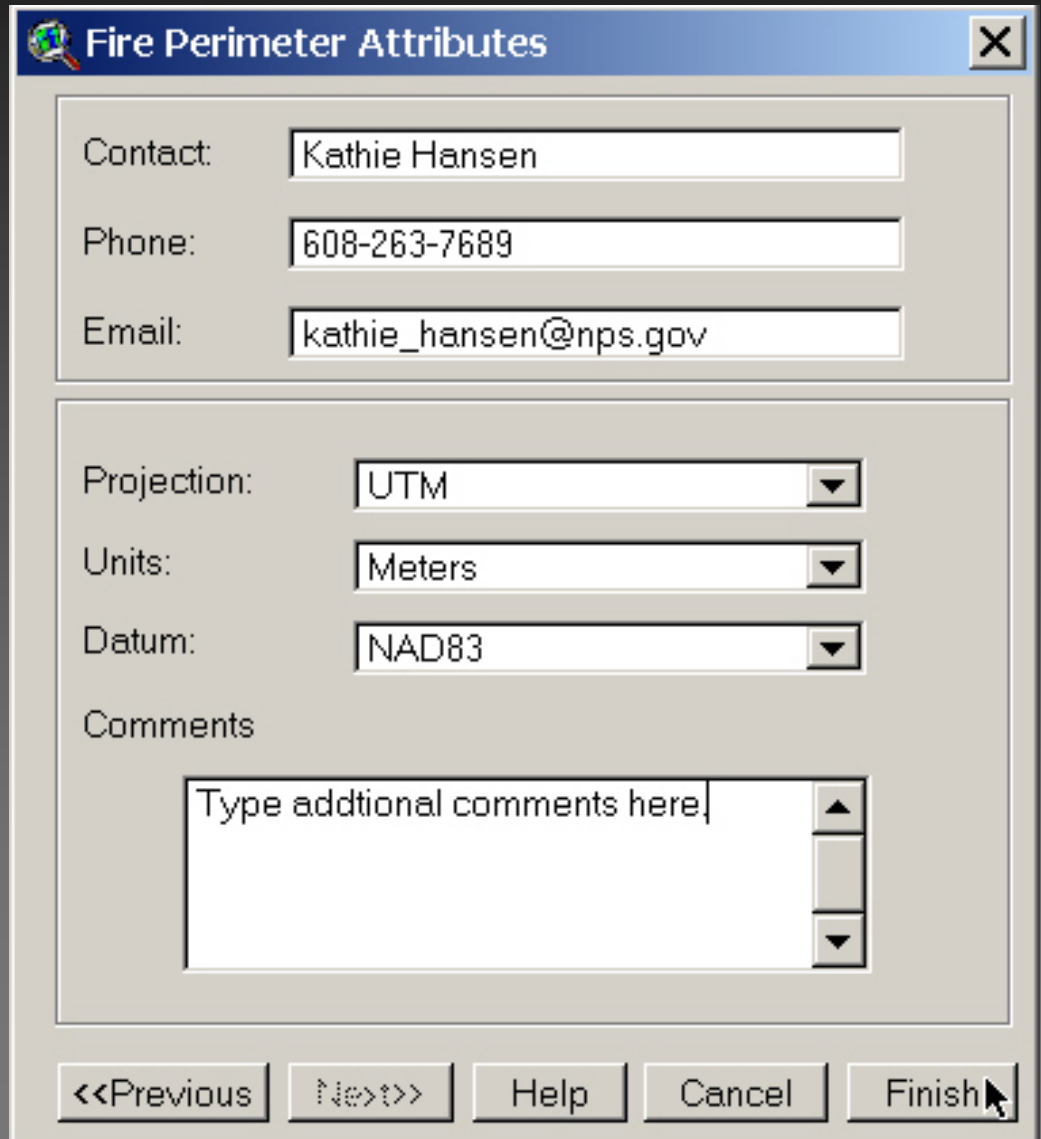


Unit ID (ex: AK-YUCH-001141)

Example displayed in the ArcView project status bar

FirePak Extension: Attribution

- Contact
- Phone
- Email
- Projection
 - Zone if UTM
- Units
- Datum
- Comments
- Finish!



The image shows a Windows-style dialog box titled "Fire Perimeter Attributes". It contains several input fields and a list of buttons at the bottom. The fields are organized into two sections. The top section contains "Contact", "Phone", and "Email" fields. The bottom section contains "Projection", "Units", "Datum", and "Comments" fields. The "Comments" field is a multi-line text area. At the bottom, there are five buttons: "<<Previous", "Next>>", "Help", "Cancel", and "Finish". A mouse cursor is pointing at the "Finish" button.

Field	Value
Contact:	Kathie Hansen
Phone:	608-263-7689
Email:	kathie_hansen@nps.gov
Projection:	UTM
Units:	Meters
Datum:	NAD83
Comments	Type additional comments here

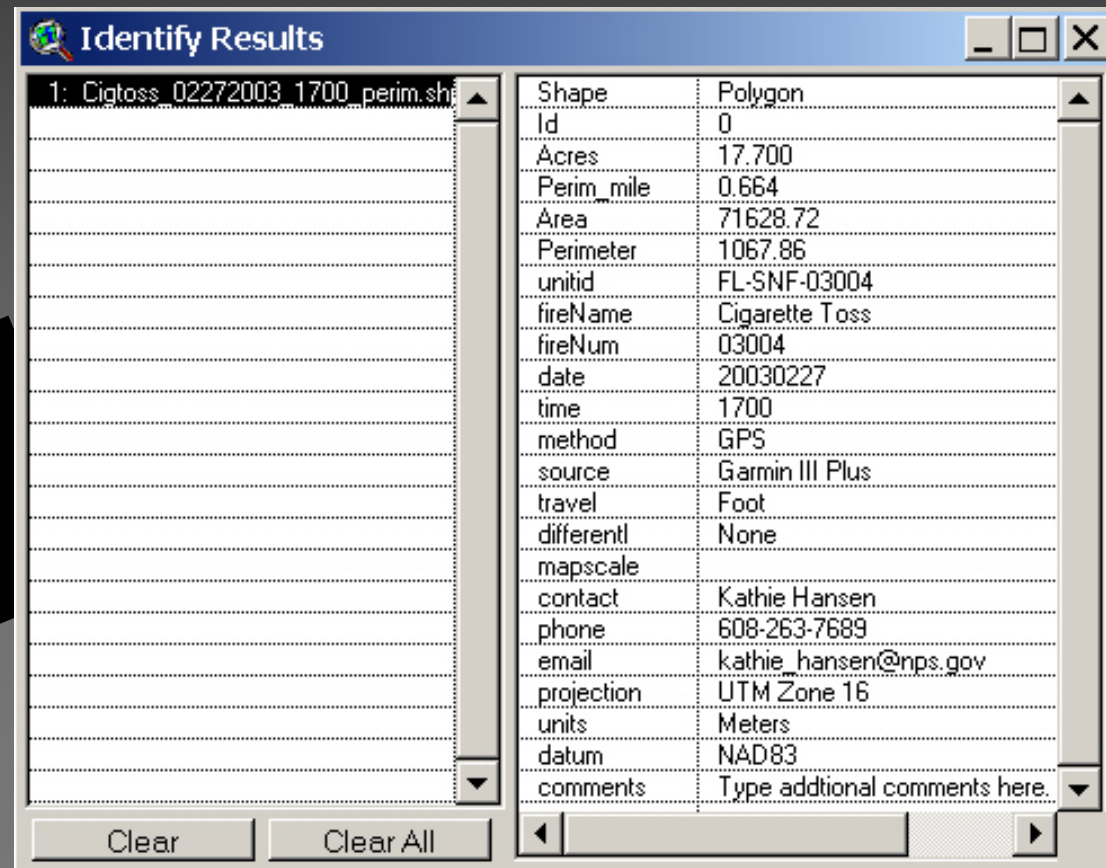
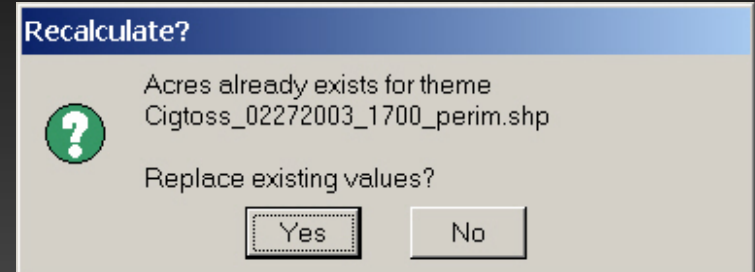
<<Previous Next>> Help Cancel Finish

FirePak Extension: Attribution

- Recalculate Acres?
- Recalculate Perimeter Miles?
- Identify Polygon Attributes

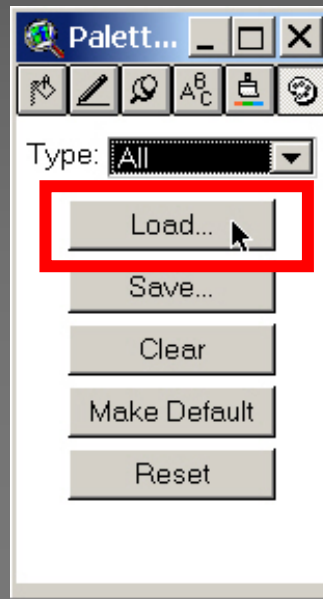


**Good attributes help
with metadata creation!**



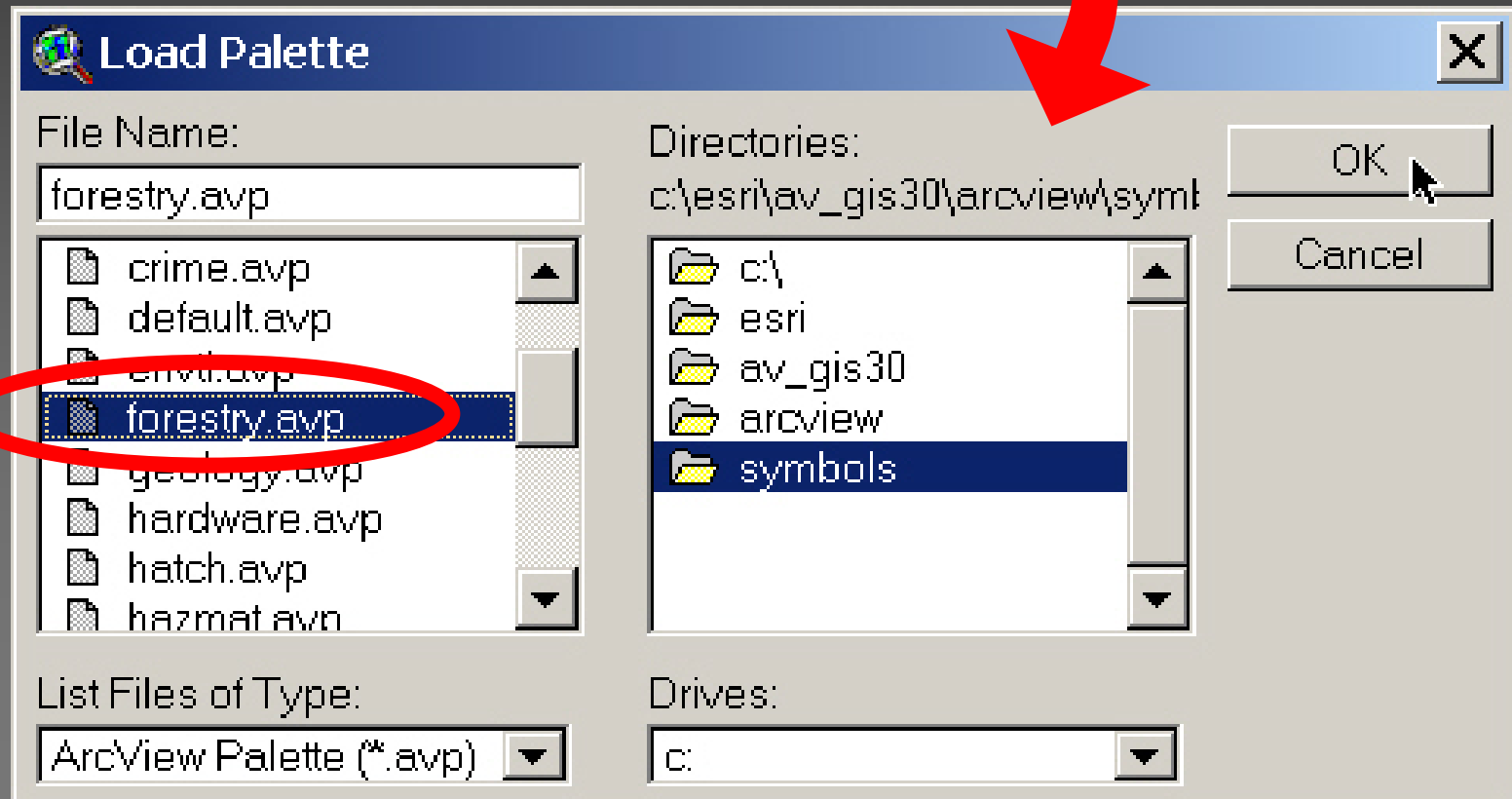
Advanced Legend Operations

- ArcView provides some **additional legend palettes** that can be loaded to your project
 - Double-click on a theme to bring up the legend editor and palette
 - Click on **palette** button
 - Click on **Load**



Advanced Legend Operations

- Browse to **c:\esri\av_gis30\arcview\symbols**
- Select **forestry.avp** from list



Advanced Legend Operations

- **Forestry.avp** has symbology similar to suggested symbols in the **fireline handbook**

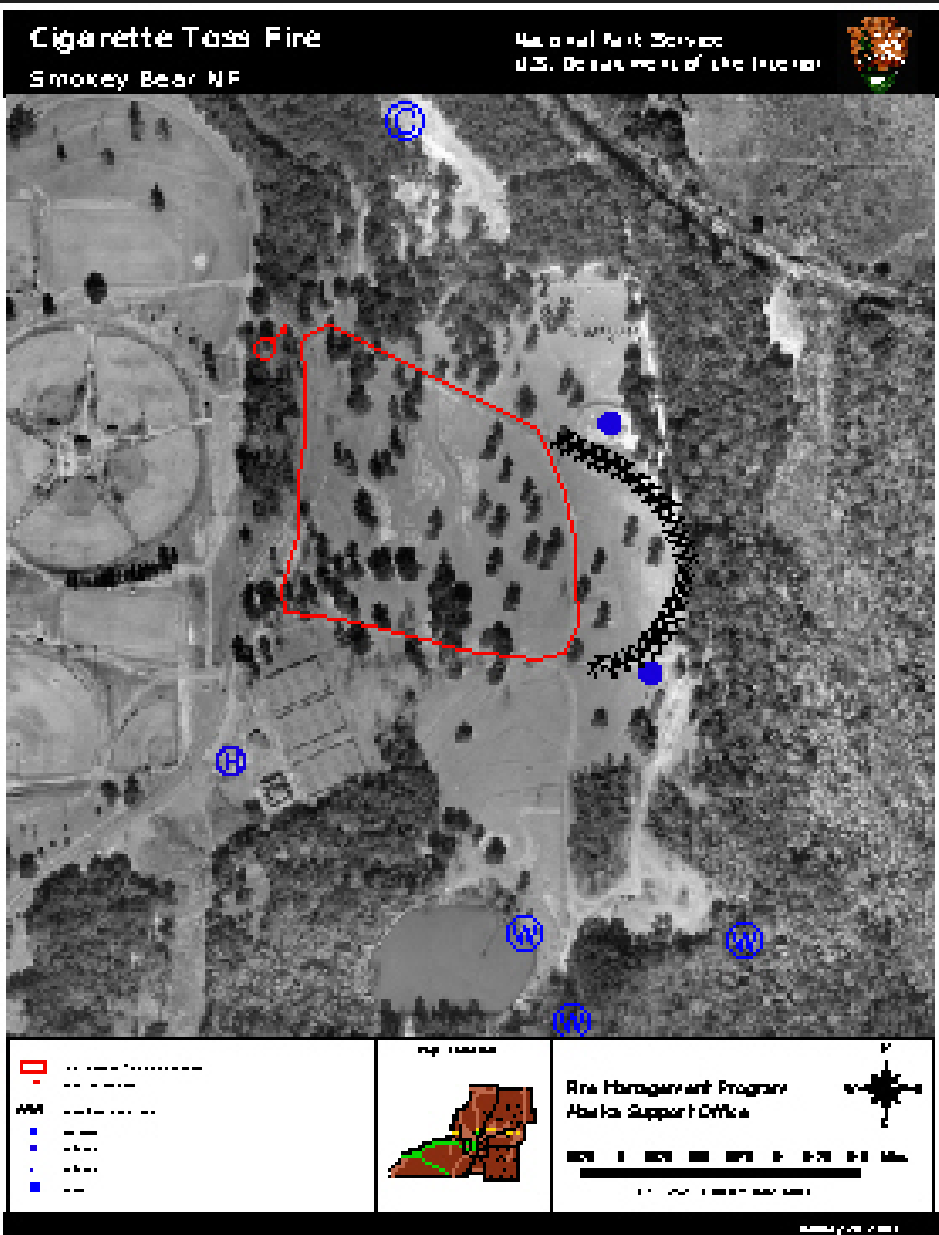
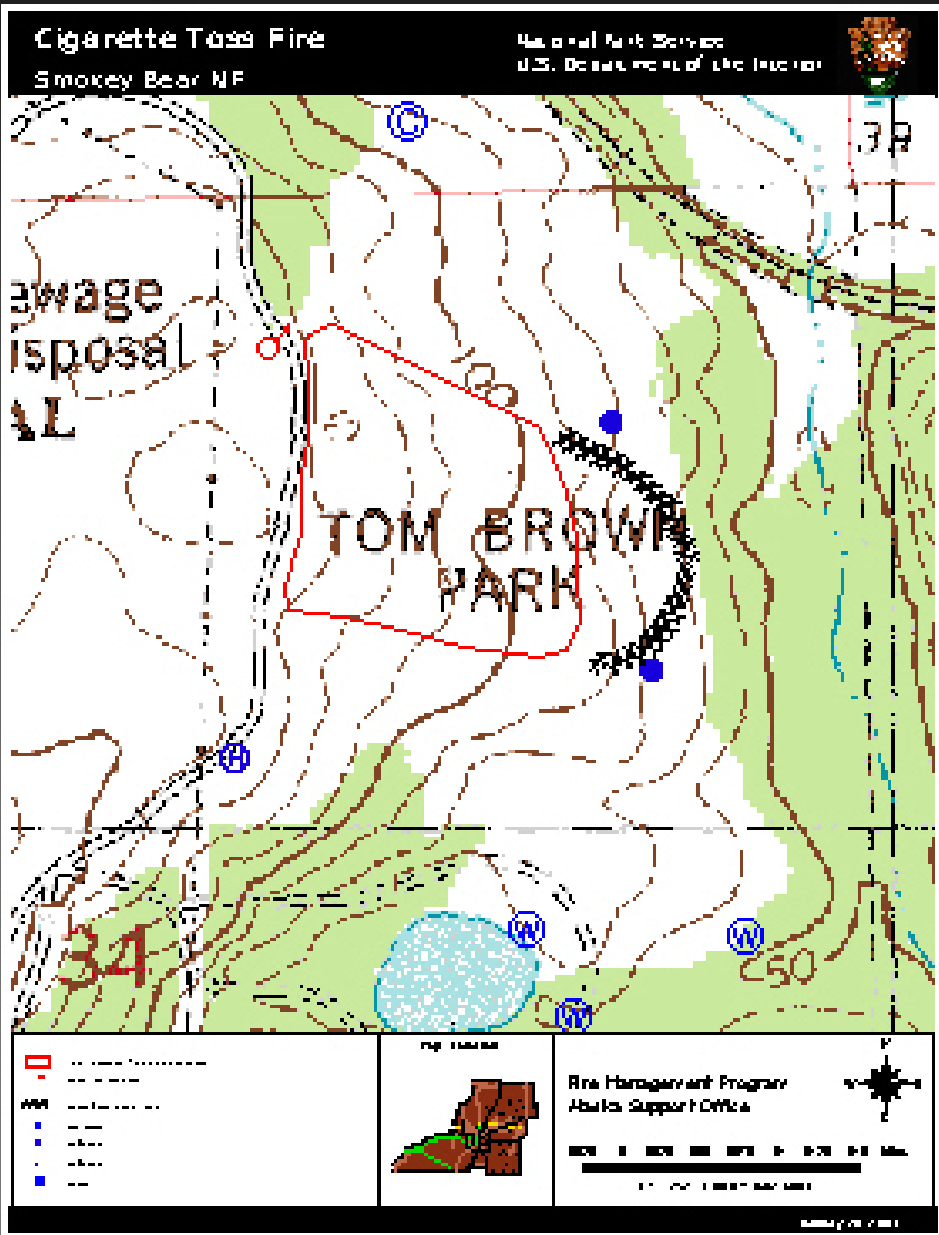


SUGGESTED FOR PLACEMENT ON BASE MAP		SUGGESTED FOR PLACEMENT ON OVERLAYS	
MINIMUM RECOMMENDED			
BLACK	(X)(X) RIDGE	RED	10 AUG 1730 UNCONTROLLED FIRE EDGE
	HIGHLIGHTED GEOGRAPHIC OR MANMADE FEATURES		10 AUG 1730 SPOT FIRE
BLACK	COMPLETED DOZER LINE		10 AUG 1700 HOT SPOT
BLACK	COMPLETED LINE	ORANGE	10 AUG 2000 FIRE SPREAD PREDICTION
RED	LINE BREAK COMPLETED		PLANNED FIRE LINE
	FIRE ORIGIN		PLANNED SECONDARY LINE
RED	HAZARD (IDENTIFY TYPE OF HAZARD, E.G., POWER LINES)	BLACK	INITIALLY NUMBERED CLOCKWISE FROM FIRE ORIGIN
BLUE	INCIDENT COMMAND POST		(A) (B) DIVISIONS
BLUE	INCIDENT BASE		INITIALLY LETTERED CLOCKWISE FROM FIRE ORIGIN
	CAMP (IDENTIFY BY NAME)		COMBINE DIVISION LETTER WITH CLOCKWISE NUMBERING WITHIN THE DIVISION
BLUE	H-3		>A-2< SEGMENTS
BLUE	HELSPOT (LOCATION AND NUMBER)		W/10 1600 9/7
BLUE	HELBASE		WIND SPEED DIRECTION
OPTIONAL	REPEATER/MOBILE RELAY		PROPOSED DOZER LINE
	TELEPHONE		FIRE BREAK (PLANNING OR INCOMPLETE)
BLUE	FIRE STATION	BLUE	STAGING AREA (IDENTIFY BY NAME)
	WATER SOURCE (IDENTIFY I.E., POND, CISTERN, HYDRANT)		
	MOBILE WEATHER UNIT		
	IR DOWN LINK		
	FIRST AID STATION		

- Click on Pen and Marker Palettes to see additions
- Edit the legend for your themes
- Then, make a map with AlaskaPak!

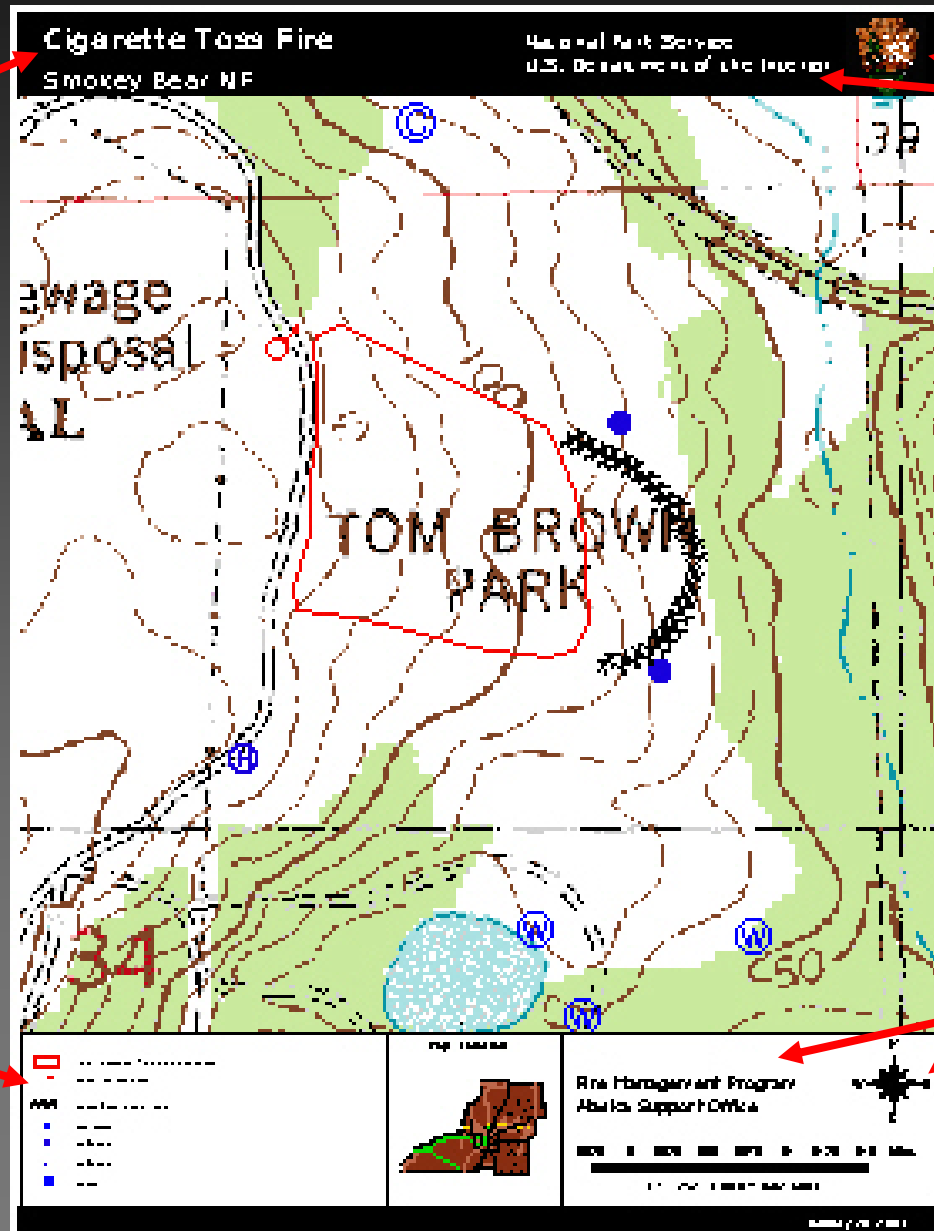


AlaskaPak Extension: Quick Map



What if you don't like this map?

**Double-click
to change**



**Double-click
to change**

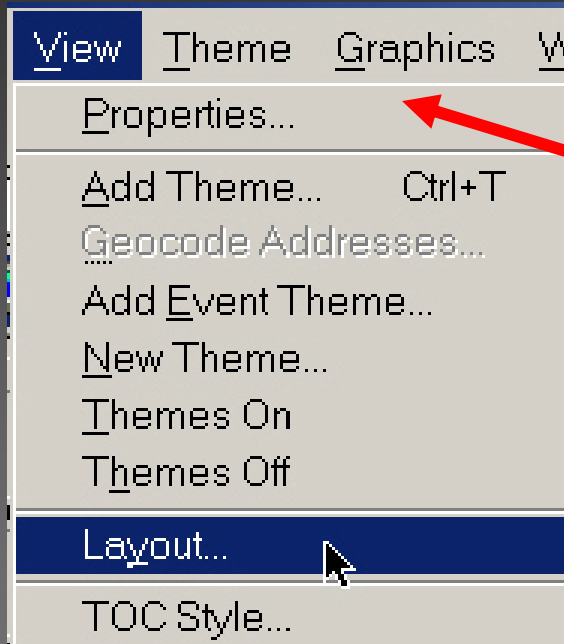
*you can find
other logos on
the CD in
BASEDATA/
LOGOS

**Double-click
to change**

**Double-click
to change**

What if you don't like this map?

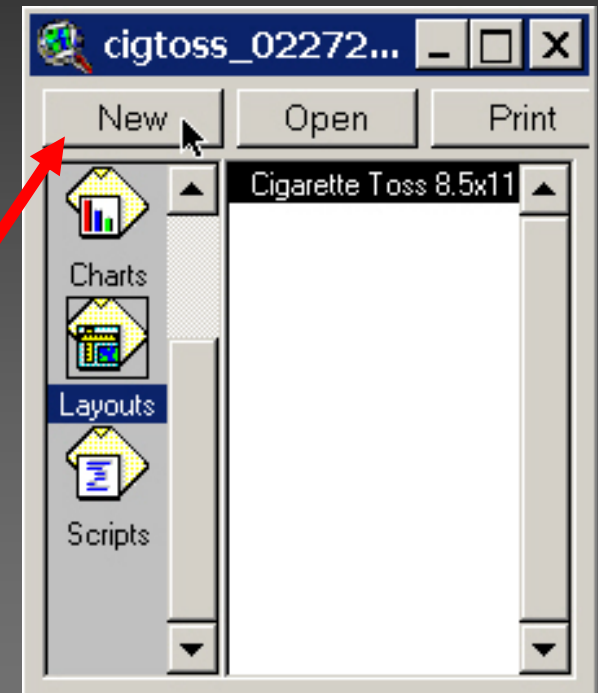
Create a Layout on your own!



View | Laayout

OR

New Layout from
Project Window



Review Pre-work ArcView Training or use **Help**

Save Layout & ArcView Project

- Export or Print Layout
 - File | Print
 - File | Export...
 - Save .jpg in products folder by date
- Save ArcView Project!!!!!!!!!!!!



Summary

- Installed and turned on FirePak Extension
- Attributed Fire Perimeter Polygon
- Performed Advanced Legend Operations
 - Added new palette to the legend editor
 - Used forestry.avp to change symbology
- Created a Layout with the AlaskaPak Layout Wizard or on your own

END OF POST-FIELD FOR CIGARETTE TOSS FIRE

- Close ArcView Project

Post-Field Summary

- DNR Garmin Program
- DNR Garmin Extension in ArcView

Managing GPS Data

Editing GPS & GIS Data

Attributing Data

Map Making